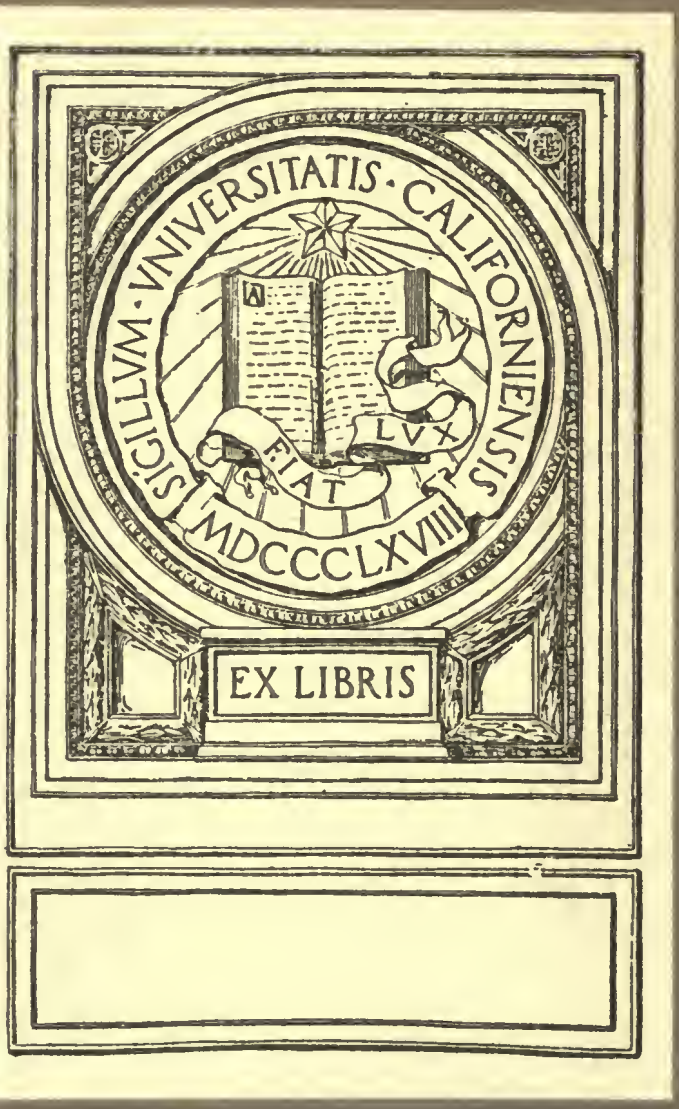
SIGILLVM · VNIVERSITATIS · CALIFORNIENSIS
FIAT
LVX
MDCCCLXVIII
EX LIBRIS

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/theismhumanismbe00balfrich

THEISM AND HUMANISM

THEISM AND HUMANISM

BEING

THE GIFFORD LECTURES

DELIVERED AT THE UNIVERSITY OF GLASGOW, 1914

BY THE

RT. HON. ARTHUR JAMES BALFOUR

M.A., F.R.S., LL.D., D.C.L.

(HON. FELLOW OF TRINITY COLLEGE, CAMBRIDGE)

UNIV. OF CALIFORNIA

HODDER AND STOUGHTON

LONDON NEW YORK TORONTO

MCMXV

B.D 5-52
B29

324533

NO MAY
ABSTRACT

Printed in Great Britain by Hazell, Watson & Viney, Ld.
London and Aylesbury.

TO THE PROFESSORS AND STUDENTS OF THE UNIVERSITY OF GLASGOW, WHO GAVE SO KIND A RECEPTION TO THESE LECTURES ON THEIR DELIVERY IN THE BUTE HALL, I DEDICATE THIS VOLUME.

PREFACE

This volume contains the substance of the Gifford Lectures delivered at the University of Glasgow in January and February 1914. I say the *substance* of the lectures, lest any of those who formed part of my most kindly audience should expect a verbal reproduction of what they then heard. No such reproduction would have been either expedient or possible. The lectures were not read: they were spoken (with the aid of brief notes) in such terms as suggested themselves at the moment; and their duration was rigidly fixed, to suit my academic audience, so as just to occupy the customary hour. Although, therefore, they were largely (though not wholly) based upon written drafts, none of the language, and not all the ideas and illustrations contained in the original could be reproduced in the spoken lectures, nor did everything in the spoken lectures represent passages in the written originals.

It is not, in these circumstances, surprising

that the work has had, in large measure, to be rewritten, though the argument itself, and the order in which its various parts are presented for consideration, remains substantially unchanged.

I should not have troubled the reader with this very unimportant narrative except for the purpose of explaining the long interval that has elapsed between the delivery of the lectures and their publication. Literary composition I have always found laborious and slow, even in favourable conditions. But the conditions have not been favourable. My anxiety to make the argument easy to read for persons who take little interest in, and have small knowledge of, philosophical controversies did not make it easy to write; while external circumstances were singularly unfavourable to rapid composition. No one who took any part in public affairs between March 1914 and the outbreak of the war, or between the outbreak of the war and the present moment, is likely to regard these months as providing convenient occasion for quiet thought and careful writing. I say this, however, not as an excuse for poor workmanship, but only as an explanation of long delay.

It may be desirable to warn the intending reader before he embarks on these lectures, that though the basis of the argument is wide, its conclusion is narrow : and though that conclusion is religious, the discussions leading up to it are secular. I make no dialectical use of the religious sentiment ; nor do I attempt any analysis of its essential character. Still less do I deal with any doctrines outside what is called " natural " religion ; for to " natural " religion the Gifford Lecturer is expressly confined. But even themes which might well be deemed to fall within these limits are scarcely referred to. For example, God, freedom, and immortality have been treated by at least one eminent writer as the great realities beyond the world of sense. I believe in them all. But I only discuss the first—and that only from a limited point of view.

One other caution I must give, though it is hardly necessary. No one, I suppose, is likely to consult this small volume in the hope of finding an historic survey, properly " documented," of the great theistic controversy. But, if so misguided an individual exists, he is doomed to the severest disappointment. There have been, and will be, Gifford Lecturers well equipped for so great an

undertaking; but most assuredly I am not among them.

My warm thanks are due to my brother, Mr. Gerald Balfour; my sister, Mrs. Sidgwick, and my brother-in-law, Lord Rayleigh, for the trouble they have taken in reading the proofs, and for the aid they have given me in correcting them.

In connection with a passage in the ninth lecture, Sir Oliver Lodge has been good enough to give me an interesting note on "energy," which appears in its proper place.

4 Carlton Gardens
May 24, 1915.

CONTENTS

PART I

INTRODUCTORY

LECTURE I

PAGE

I. Introductory: Metaphysics and the "Plain Man" 3

II. "Inevitable" Beliefs and Common Sense 13

III. The Material of the Present Argument for Theism: the Character of the Theism to be established . . 17

IV. What the Argument is not. Some of its Limitations 23

LECTURE II

I. Design and Selection 28

II. Argument from Values. The Cognitive and the Causal Series . . 44

PART II

ÆSTHETIC AND ETHICAL VALUES

LECTURE III

ÆSTHETIC AND THEISM

PAGE

I. Æsthetic described 55

II. Whence comes it? 58

III. Values and the Higher Emotions . 63

IV. Natural Beauty 77

V. Æsthetic of History 81

LECTURE IV

ETHICS AND THEISM

I. Ethics described 95

II. Egoism, Altruism, and Selection . . 98

III. Selection and the Higher Morality . 107

IV. Same subject continued 119

V. Theism and the Collision of Ends . 122

PART III

INTELLECTUAL VALUES

LECTURE V

INTRODUCTION TO PART III

PAGE

I. Retrospect 133

II. Reason and Causation . . . 134

III. Leslie Stephen, and Locke's Aphorism 136

IV. Reason and Empirical Agnosticism . 145

LECTURE VI

PERCEPTION, COMMON SENSE, AND SCIENCE

I. Common Sense and the External World 149

II. Science and the External World . 153

III. Primary and Secondary Qualities . 156

IV. Perception as a Causal Series . . 160

V. Perception as a Cognitive Act . . 165

VI. An Irresistible Assumption . . 170

LECTURE VII

PROBABILITY, CALCULABLE AND INTUITIVE

PAGE

I. Mathematicians and Probability . 175

II. Calculable Probability . . . 178

III. Intuitive Probability . . . 189

LECTURE VIII

UNIFORMITY AND CAUSATION

I. Habit, Expectation, Induction . . 192

II. Regularity, Causation . . . 195

III. The Principle of Negligibility . . 199

IV. Causation and Foreknowledge . . 207

LECTURE IX

TENDENCIES OF SCIENTIFIC BELIEF

I. From Beliefs that we must hold to Beliefs that we are inclined to hold 217

II. Atomism. Beliefs of Conservation . 220

III. Epilogue 238

PART IV

SUMMARY AND CONCLUSION

LECTURE X

PAGE

I. Humanism and Theism. . . . 247

II. The Doctrine of Congruity . . 249

III. Is this Systematic Philosophy? . . 261

IV. Conclusion 268

[*The paragraph headings in this Table of Contents are not designed to give more than a very imperfect suggestion of the subjects discussed. I have put them in for the convenience of those who, having read the book, wish to refer back to some particular passage. The headings do not appear in the text.*]

PART I

INTRODUCTORY

UNIV. OF
CALIFORNIA

LECTURE I

I

THOSE responsible for the selection of Gifford Lecturers have made it clear that, in their interpretation of Lord Gifford's Trust, studies in a very wide range of subjects are relevant to the theme of Natural Religion. Gifford lectures have been devoted to such diverse themes as Comparative Religion, Primitive Mythologies, Vitalism, Psychology of Religious Experiences, the History of Religious Development at particular Epochs. And, in addition to these, we have had expounded to us systems of Metaphysics of more than one type, and drawing their inspiration from more than one school.

When I was honoured by an invitation to take a share in the perennial debate which centres round what Lord Gifford described as Natural Religion, I had to consider what kind of contribution I was least unfitted to make. Perhaps if this consideration had preceded

my reply to the invitation, instead of following it, I might have declined the perilous honour. Neither in my own opinion nor in that of anybody else, am I qualified to contribute a special study of any of the scientific, psychological, anthropological, or historical problems which may throw light upon the central issue. This must of necessity be the work of specialists. No metaphysical system, again, am I in a position to provide;—for reasons which will appear in the sequel. A merely critical commentary upon the systems of other people might hardly meet either the expectations of my audience, or the wishes of those who appointed me to the post. Indeed, the enormous range of modern philosophic literature, and the divergent tendencies of modern philosophic thought would make the task, in any case, one of extreme difficulty. Few, indeed, are those who, by the width of their reading and the quickness of their intellectual sympathy, are qualified to survey the whole field of contemporary speculation; and, assuredly, I am not among them.

The vast amplitude of relevant material daily growing with the growth of knowledge, cannot but hamper the sincerest efforts of those who desire to take a comprehensive

view of the great problems which Lord Gifford desired to solve. Most men are amateurs in all departments of activity but the one, be it scientific or practical, or artistic, to which they have devoted their lives. Bacon, indeed, with the magnificent audacity of youth, took all knowledge for his province. But he did so in the sixteenth century, not in the twentieth; and even Bacon did not escape the charge of being an amateur. No one, while human faculty remains unchanged, is likely to imitate his ambitions. More and more does the division and subdivision of labour become necessary for knowledge, as for industry. More and more have men to choose whether they shall be dabblers in many subjects or specialists in one. 'More and more does it become clear that, while each class has its characteristic defects, both are required in the republic of knowledge.'

So far as specialists are concerned, this last proposition is self-evident. Specialists are a necessity. And it may well be that those who have successfully pressed forward the conquering forces of discovery along some narrow front, careless how the struggle towards enlightenment fared elsewhere, may be deemed by the historian to have been not

only the happiest, but the most useful thinkers of their generation. Their achievements are definite. Their contributions to knowledge can be named and catalogued. The memory of them will remain when contemporary efforts to reach some general point of view will seem to posterity strangely ill-directed, worthless to all but the antiquarian explorers of half-forgotten speculation.

'Yet such efforts can never be abandoned, nor can they be confined to philosophers. There are for all men moments when the need for some general point of view becomes insistent; when neither labour, nor care, nor pleasure, nor idleness, nor habit will stop a man from asking how he is to regard the universe of reality, how he is to think of it as a whole, how he is to think of his own relation to it.'

Now I have no wish to overpraise these moments of reflection. They are not among the greatest. They do not of necessity involve strenuous action, or deep emotion, or concentrated thought. Often they are periods of relaxation rather than of tension, moods that pass and leave no trace. 'Yet it is not always so; and when the pressure of these ancient problems becomes oppressive, then

those who, from taste or necessity, have lived only from hour to hour, seek aid from those who have had leisure and inclination to give them a more prolonged consideration.

Of these there is no lack; some speaking in the name of science, some in the name of religion, some in the name of philosophy. The founder of these lectures regarded philosophy, and (if I mistake not) philosophy in its most metaphysical aspect, as the surest guide to the truths of which he was in search. And certainly I am the last to criticies such a view. It is clearly the business of metaphysicians, if they have any business at all, to provide us with a universal system. They cannot lose themselves in concrete details, as may happen to men of science. They are neither aided, nor trammelled, as all working organisations, whether in Church or State, are necessarily aided and trammelled, by institutional traditions and practical necessities. They exist to supply answers to the very questions of which I have been speaking. Yet metaphysics does not appeal, and has never appealed, to the world at large. For one man who climbs to his chosen point of view by a metaphysical pathway, a thousand use some other road;

and if we ask ourselves how many persons there are at this moment in existence whose views of the universe have been consciously modified by the great metaphysical systems (except in so far as these have been turned to account by theologians), we must admit that the number is insignificant.

Now, I do not think this is due to the fact, so often commented upon, both by the friends of metaphysics and its foes, that in this branch of inquiry there is little agreement among experts; that the labours of centuries have produced no accepted body of knowledge; that, while the separate sciences progress, metaphysics, which should justify them all, seems alone to change without advancing. Mankind is not so easily discouraged. New remedies are not less eagerly adopted because old remedies have so often failed. Few persons are prevented from thinking themselves right by the reflection that, if they be right, the rest of the world is wrong. And were metaphysical systems what men wanted, the disagreements among metaphysicians would no more destroy interest in metaphysics than the disagreements among theologians destroys interest in theology. The evil, if evil it be, lies deeper. It is not so

much that mankind reject metaphysical systems, as that they omit the preliminary stage of considering them. Philosophy is now, perhaps has always been, an academic discipline which touches not our ordinary life. A general knowledge of the historic schools of thought may indeed be acquired by the young as part of their education; but it is commonly forgotten by the middle-aged; and, whether forgotten or remembered, is rarely treated as in any vital relation to the beliefs and disbeliefs which represent their working theories of life and death.

If you desire confirmation of this statement, consider how few men of science have shown the smallest interest in metaphysical speculation. Philosophers, with one or two notorious exceptions, have commonly had a fair amateur acquaintance with the science of their day. Kant, though I believe that his mechanics were not always beyond reproach, anticipated Laplace in one famous hypothesis. Descartes and Leibnitz would be immortalised as mathematicians if they had never touched philosophy, and as philosophers if they had never touched mathematics. In our own day Huxley not only contributed to biology, but wrote on philosophy. Yet, speaking generally, meta-

physics has in modern times been treated by men of science with an indifference which is sometimes respectful, more commonly contemptuous, almost always complete.

Nor can we attribute this attitude of mind, whether on the part of scientific specialists or the general public, to absorption in merely material interests. There are some observers who would have us believe that the energies of Western civilisation are now [1] entirely occupied in the double task of creating wealth and disputing over its distribution. I cannot think so; I doubt whether there has been for generations a deeper interest than at this moment in things spiritual—however different be its manifestations from those with which we are familiar in history. We must look elsewhere for an explanation of our problem. There must be other reasons why, to the world at large, those who study metaphysics seem to sit (as it were) far apart from their fellow-men, seeking wisdom by methods hard of comprehension, and gently quarrelling with each other in an unknown tongue.

Among these reasons must no doubt be reckoned the very technical character of much metaphysical exposition. Some of this could

[1] Written before the war.

be avoided, much of it could not; and, in any case, philosophers might well ask why people should expect metaphysics—to say nothing of logic and psychology—to be easier of comprehension than the differential calculus or the electro-magnetic theory of light. Plainly, there is no reason: and, in so far as the thoughts to be expressed are difficult, and the language required to express them is unfamiliar, the evil admits of no remedy.

But there is something more to be said. It must, I think, be admitted that most men approach the difficulties of a scientific exposition far more hopefully than the difficulties of a metaphysical argument. They will take more trouble because they expect more result. But why? In part, I think, because so much metaphysical debate is not, or does not appear to be, addressed to the problems of which they feel the pinch. On the contrary, it confuses what to them seems plain; it raises doubts about what to them seems obvious; and, of the doubts which they *do* entertain, it provides no simple or convincing solution.

The fact is, of course, that the metaphysician wants to re-think the universe; the plain man does not. The metaphysician seeks for an

inclusive system where all reality can be rationally housed. The plain man is less ambitious. He is content with the kind of knowledge he possesses about men and things —so far as it goes. Science has already told him much; each day it tells him more. And, within the clearing thus made for him in the tangled wilderness of the unknown, he feels at home. Here he can manage his own affairs; here he needs no philosophy to help him. If philosophy can speak to him about questions on which science has little to say, he will listen; provided always that the problems dealt with are interesting, and the treatment of them easily understood. He would like, for example, to hear about God, if there be a God, and his Soul, if he has a Soul. But he turns silently away from discussions on the One and the Many, on Subject and Object, on degrees of Reality, on the possibility of Error, on Space and Time, on Reason and Intuition, on the nature of Experience, on the logical characteristics of the Absolute. These may be very proper topics for metaphysicians, but clearly they are no topics for him.

Now I am far from saying that in these opinions the plain man is right. His speculative ambitions are small, and his tacit assump-

tions are many. What is familiar seems to him easy; what is unfamiliar seems to him useless. And he is provokingly unaware of the difficulties with which his common-sense doctrines are beset. Yet in spite of all this, he has my sympathy; and I propose, with due qualifications and explanations, to approach the great subject, described by the Trust as Natural Religion, from his—the plain man's—point of view.

II

But what *is* the plain man's point of view? What *is* the creed of common sense?

It has never been summed up in articles, nor fenced round with definitions. But in our ordinary moments we all hold it; and there should be no insuperable difficulty in coming to an agreement about certain of its characteristics which are relevant to the purposes of my immediate argument. One such characteristic is that its most important formulas represent beliefs which, whether true or false, whether proved or unproved, are at least *inevitable*. All men accept them in fact. Even those who criticise them in theory live by them in practice.

Now this category of "inevitableness" is not often met with in metaphysics; indeed, so far as I know, it is not met with at all. We hear of innate beliefs, *a priori* judgments, axioms, laws of thought, truths of reason, truths the opposite of which is "inconceivable"—and so forth. These various descriptions are all devised in the interests of epistemology, i.e. the theory of knowledge. They are intended to mark off classes of judgments or beliefs which possess peculiar validity. But none of these classes are identical with the class "inevitable." There are inevitable beliefs which nobody would think of describing either as *a priori* or axiomatic. There are others of which the contradictory is perfectly conceivable; though no one who had other things to do would take the trouble to conceive it. An inevitable belief need not be self-evident, nor even, in the last analysis, self-consistent. It is enough that those who deem it in need of proof yet cannot prove it, and those who think it lacks coherence yet cannot harmonise it, believe it all the same.

But, are there such inevitable beliefs? There certainly are. We cannot, in obedience to any dialectical pressure, suppose the world to be emptied of persons who think, who

feel, who will; or of things which are material, independent, extended, and enduring. We cannot doubt that such entities exist, nor that they act on one another, nor that they are in space or time. Neither can we doubt that, in the world thus pictured, there reigns an amount of stability and repetition, which suggests anticipations and retrospects—and sometimes justifies them.

These beliefs are beliefs about what are sometimes called "facts" and sometimes "phenomena"—neither term being either very convenient or very accurate. They are assumed in all sciences of nature, in all histories of the past, in all forecasts of the future, in all practice, in all theory, outside philosophy itself. But there are two other kinds of beliefs which must, I think, be also regarded as inevitable, of which I shall have to speak in the course of these lectures. They have unfortunately no generic names, and I must defer any description of them till future lectures. It is sufficient for the moment to say that one of them relates to the ends of action, and includes morals; while the other relates to objects of contemplative interest, among which is beauty. In some shape or other—perhaps in shapes which seem to us

utterly immoral or disgusting—beliefs of both kinds are, so far as I can judge, entertained by all men. And though they have not the coercive force possessed by such beliefs as those in the independent existence of things and persons, they may be counted, for my purposes, among the inevitable.

Here, then, are three classes of belief which in some shape or other common sense holds, has always held, and cannot help holding. But evidently the shapes in which they may be held are many. They vary from age to age and from person to person. They are modified by education, by temperament, by the general condition of learning, by individual opportunities, and by social pressure. The common sense of the twentieth century A.D. is very different from the common sense of the twentieth century B.C. Yet, different though it be, it possesses unalterable similarities, and up to a certain point submits to the same classification.

If you desire an illustration, consider the case of matter, or of material things. All men believe in what is commonly called the "external world"—they believe in it with evidence, or without evidence, sometimes (like David Hume) in the teeth of evidence, in any

case independently of evidence. But as to what this "external world" really is they differ profoundly. The expert of to-day differs from the expert of yesterday, both differ from the average man, the average man of the twentieth century differs from his predecessors, and they differ from each other according to the stage of general and scientific culture at which they have severally arrived.

III

But, though all this be granted, to what, you may be disposed to ask, does it lead? What has it got to do with Theism? It is not alleged that in any shape these inevitable beliefs are necessarily true; it is admitted that in most of the shapes in which men have held them they are actually false; it is not even suggested that a belief in God is to be counted among them. How, then, is Natural Theology advanced?

To answer this question would be to anticipate the nine lectures which are still to come. In the meanwhile, it may be enough to say that these beliefs of common sense supply the material on which I propose to work; that I

shall treat them as a developing and improving system, of which the present phase is the most developed and the best. It is with this phase that I am chiefly concerned. If, for example, I make use of beliefs about the "external world" they will be (mainly) the beliefs of contemporary or recent science so far as I know them. If I make use of ethics or æsthetics, it will be the ethics and æsthetics of Western civilisation, not of Melanesia. I shall not add to them nor subtract from them. I shall not criticise nor question them. I shall accept them at their face values. But I shall ask what this acceptance implies. I shall ask how these values are to be maintained. And in particular I shall inquire whether the course of development, whose last known stages these beliefs represent, can be regarded as a merely naturalistic process without doing fatal damage to their credit.

The answer I shall give to this last question will be in the negative. And, if the only alternative to Naturalism be Theism, as from the common-sense standpoint it certainly is, then the effect of my argument, for those who accept it, will be to link up a belief in God with all that is, or seems, most assured in knowledge, all that is, or seems, most beautiful in art or

nature, and all that is, or seems, most noble in morality.

At this point you will inevitably ask me to explain what sort of Deity He is whose existence I wish to establish. Men have thought of God in many ways. In what way is He thought of in these lectures ?

The question is legitimate, though I am in some doubt how far you will regard my answer as satisfactory. I, of course, admit that the conception of God has taken many shapes in the long-drawn course of human development, some of them degraded, all of them inadequate. But this, or something like this, was inevitable on any theory of development ; and the subject-matter of theology does not seem to have fared differently in this respect from the subject-matter (say) of physics or psychology. It is in all cases the later stages of the process which mainly concern us.

There is, however, something more to be said. The highest conceptions of God seem to approximate to one of two types, which, without prejudice, and merely for convenience, I may respectively call the religious and the metaphysical. The metaphysical conception emphasises His all-inclusive unity. The religious type emphasises His ethical personality.

The metaphysical type tends to regard Him as the logical glue which holds multiplicity together and makes it intelligible. The religious type willingly turns away from such speculations about the Absolute, to love and worship a Spirit among spirits. Which of these types is contemplated in the argument that follows?

To this question I would reply by another. Are the two conceptions incompatible? Must we abandon the second if we accept the first? If so, it is the second of which I propose to speak. It is the God according to religion, and not the God according to metaphysics, whose being I wish to prove. But there are theologians and philosophers of repute who think the two conceptions can be harmonised. They hold that belief in a personal and transcendent God is consistent with the acceptance even of those forms of Absolute Idealism which their friends call logical and their critics call intellectual—in both cases, perhaps, without sufficient justification.

For myself, I must admit that I have never succeeded to my own satisfaction in fusing the two conceptions. Yet I do not profess to be content with their separation. The attribution of personality to God, though much truer, I think, than the denial of it, is mani-

festly inadequate to the full reality we are struggling to express. Some of the greatest religious teachers, Christian and non-Christian, that the world has seen have more or less explicitly held both, or at least have leaned towards neither exclusively. This is surely true, for example, of Plato the Greek philosopher, of Philo the platonising Jew, of St. Paul the Christian Apostle, of St. Augustine the patristic theologian. Nor (so far as I know), has religious mysticism ever felt the least difficulty in bridging the chasm by which, in the eyes of discursive reason, the two conceptions seem to be divided. This may well represent the highest wisdom. But, the argument of these lectures has a narrower scope: and when, in the course of them, I speak of God, I mean something other than an Identity wherein all differences vanish, or a Unity which includes but does not transcend the differences which it somehow holds in solution. I mean a God whom men can love, a God to whom men can pray, who takes sides, who has purposes and preferences, whose attributes, howsoever conceived, leave unimpaired the possibility of a personal relation between Himself and those whom He has created.

But is not this (it may be objected) the de-

gradation of religion? What is a deity so conceived but the old tribal god, with his character improved and his local limitations swept away? If God be not the Absolute, can he be more than a magnified man? Can you hope to cleanse these religious conceptions from the mud in which they once so rankly flourished?

Now there are plenty of unsolved, and perhaps insoluble, difficulties involved in the religious, or indeed in any other, conception of God. But I hardly count among them the lowly origin and crime-stained history of religious development. On this point you will be able to form a better opinion as these lectures proceed. But, in the meanwhile, it may be observed that though no tragic accompaniments attach to the growth of a purely Absolutist philosophy, this by no means implies that metaphysics is better than religion. It is true that, for the sake of a purely logical Absolute, no man has been moved to do what a later and higher morality condemns—to placate it, for example, with bloody rites or obscene revels. But this is because, for the sake of such an Absolute, no man has ever yet been moved to do anything at all. A belief in it may be the conclusion of our intellectual labours; but hardly (as it seems to me) their motive or their reward.

IV

Let me now bring this introductory lecture to a close by adding to what, so far, must seem a bare and obscure suggestion of what my argument *is*, a warning hint as to what, at first sight, it might seem to be, but is *not*.

It is not an argument from common sense, as that phrase ought properly to be interpreted. It does not say to the opponents of Theism: "You accept current beliefs in science, in morality, in ethics. In some shape or other common sense has always accepted them, in some shape or other you cannot help accepting them. You do, in fact, probably accept them in the shape which finds favour with the 'best thought of the age' or what you conceive to be such. This is common sense. Why not do in the sphere of religion what you are admittedly doing in these other spheres of theory and practice? Would not this be common sense also? True, there is one important difference between the two cases. Theological beliefs are not inevitable—at least not at our present stage of culture. It is possible to be an atheist; and easy to be an agnostic. But inevitableness, in itself, is no ground of

philosophic certitude. So this point may be ignored; and in all other respects the parallel seems to be complete. Some form of Theism has been prevalent from an immemorial past. It has strongly appealed to the needs and feelings of mankind. You do not pause before accepting beliefs about things and persons till philosophy has solved all the speculative doubts about them which philosophy itself has raised. Why, then, should you apply a standard of rationality to religion which, with general approval, you reject in the case of science?"

Now I do not suggest that this is bad advice. Quite the contrary. Neither is it necessarily bad argument. But it is not the argument of these lectures. Whatever be its intrinsic merits, it has, from my point of view, the defect of implying a theory of knowledge—a very modest and unassuming theory indeed; but still a theory. And it therefore comes into competition with all other theories of knowledge—Absolutist, Empirical, Pragmatic, Neo-Kantian, Neo-Hegelian, Realist, New Realist, to say nothing of Professor Mach's philosophy of science, or M. Bergson's world-famous speculations.

Now I preach no theory of knowledge;

partly because I have none to preach, partly because, in these lectures, I desire to dogmatise as little as I can about fundamentals, and to be constructive rather than critical. If you ask me how it is possible to be constructive without first settling fundamentals, and how it is possible to settle fundamentals without first being critical, I reply that it is only possible if you start from premises which are practically accepted by both parties to the controversy, however little agreement there may be as to their speculative proof; and this is what I am trying to do.

Nor ought this procedure to be deemed unworthy of the attention of serious thinkers. It is provisional, no doubt; but I do not think it shallow. It can never give us a metaphysic of the universe; but the creators of such a metaphysic, when they come, will not find it stand in their way. Moreover, it takes account of facts as they are. A creed of some kind, religious or irreligious, is a vital necessity for all, not a speculative luxury for the few: and the practical creed of the few who speculate has a singular, and even suspicious, resemblance to that of the many who do not. While those rare individuals who have thought deeply about the theory of

knowledge are profoundly divided as to *why* we should believe, they largely agree as to *what* we should believe with that vast multitude who, on the theory of knowledge, have never thought at all. Is not this a circumstance in itself most worthy of closer consideration? May it not guide us to some approximate solution of our present perplexities? The present lectures are an attempt to answer this question.

Is my argument, then, nothing better than an appeal from the competent to the incompetent, from the few to the many? By no means. Progress, though of small account unless it touch the many, gets its vital impetus always from the few. It is to the patient labours of those rare intelligences who possess originality, courage, subtlety, and sympathy that we must look for the gradual working out of a theory of the universe which shall as fully satisfy our reason and our conscience as the limitations of our faculties permit. But that consummation is not yet. And since, whether we be philosophers or not, we all act on a working body of root-beliefs about men and things: since we are also in general agreement as to the form in which those beliefs can best express the present state of knowledge, is it not legitimate to ask

whether, on the basis thus provided, a still larger measure of practical harmony cannot in the meantime be reasonably established? It is true that Theism could never by such methods acquire a certitude either greater than, or independent of, the beliefs of science and common sense. But, could it acquire as much, theologians might well be content, though philosophers most rightly strove for more.

LECTURE II

I

THE argument, then, which I propose to lay before you, though its material is provided by our common-sense beliefs, is not an argument from common sense. It does not extend to theology those uncritical methods which we accept (most of us without protest) in the sphere of our every-day activities. Is it, then, you may be tempted to ask, some form of the yet more familiar argument from design? Is it more than Paley and the Bridgwater treatises brought up to date? And, if so, has not the vanity of all such endeavours been demonstrated in advance: from the side of sceptical philosophy by Hume; from the side of idealist philosophy by Kant and his successors; from the side of empirical philosophy by the nineteenth-century agnostics; from the side of science by the theory of Natural Selection? Do not the very catch-words of the argument—"contrivance," "de-

sign," " adaptation," exercised by the " Architect of the Universe " fill us with a certain weariness ? Do they not represent the very dregs of stale apologetics ; the outworn residue of half-forgotten controversies ?

For my own part, I do not think the argument from contrivance bad, but I do think it very limited : limited in respect of its premises ; limited also in respect of its conclusions. It may, perhaps, be worth dwelling on some of these limitations, if only to make my own position clearer by contrast.

In the first place, it must be noted that, from a consideration of inanimate nature alone it is difficult, perhaps impossible, to infer design. The mere existence of natural laws is not, as it seems to me, a sufficient basis for the argument ; we require also that these laws should combine to subserve an end. Were the universe, for example, like a huge impervious reservoir of some simple gas, where nothing rested but nothing changed, where amid all the hurry and bustle of colliding atoms no new thing was ever born, nor any old thing ever perished, we might find in it admirable illustrations of natural law, but no hints, so far as I can see, of purpose or design. Nor is the case really mended if,

instead of thus artificially simplifying inanimate nature, we consider it in all its concrete complexity. Even cosmic evolution of the Spencerian type will scarcely help us. Herbert Spencer, as we know, regarded the world-story as a continuous progress from the simple to the complex, in which the emergence of the living out of the not-living is treated as a harmonious episode in one vast evolutionary drama. The plot opens in the first chapter with diffused nebulæ; it culminates in the last with the social organisation of man. Unfortunately its central episode, the transition from the not-living to the living, was never explained by the author of the "Synthetic Philosophy"; and the lamentable gap must be filled in by each disciple according to his personal predilections. For the moment, however, we are concerned only with one part of the story, that which deals with the evolution of inanimate nature. Can this be regarded as displaying design? I hardly think so. 'Granting, for the sake of argument, the validity of the Spencerian physics, granting that the material Universe exhibits this general trend from the simple to the complex, from a loose diffusion of nebulous matter to the balanced movements of suns and satellites,

does this of itself give any hint of purpose? Only, I believe, if we confound evolution with elaboration and elaboration with improvement, and read into it some suggestion of progress borrowed from biology or ethics, sociology or religion.

But we have not the slightest right to do this. Apart from life and thought, there is no reason to regard one form of material distribution as in any respect superior to another. A solar system may be more interesting than its parent nebula; it may be more beautiful. But if there be none to unravel its intricacies or admire its splendours, in what respect is it better? Its constituent atoms are more definitely grouped, the groups move in assignable orbits; but why should the process by which these results have been achieved be regarded as other than one of purposeless change super-induced upon meaningless uniformity? Why should this type of "evolution" have about it any suggestion of progress? And, if it has not, how can it indicate design?

Spencer himself was, of course, no advocate of "design" after the manner of Paley; and I only mention his cosmic speculations because their unavowed optimism—the optimism that

is always apt to lurk in the word " evolution " —makes of them material peculiarly suitable for those who seek for marks of design in lifeless nature. But let us add two touches to Spencer's picture, and see how the argument then stands.

I have already commented on the great omission which mars the continuity of his world-story—the omission, I mean, of any account of the transition from the not-living to the living. I shall have again to refer to it. But there are, besides this, two other omissions, one at the beginning of his narrative, and the other at the end, whose significance in relation to " design " should receive a passing comment.

As I understand the matter, an intelligence sufficiently endowed—let us call him Laplace's calculator—might infer the past state of the material universe from the present by a process of rigorous deduction, on accepted physical principles. But, if he carried back his investigations into a period sufficiently remote, he would find a point at which certain fundamental processes reach a theoretical limit ; and, though we must believe that this condition of things had antecedents, yet infinite powers of calculation, based upon infinite

knowledge of the present, could not, it seems, tell us what they were.

So much for the past. Now for the future. Here our calculator would be more successful. His prophecy, unlike his history, would not break helplessly against any impassable barrier. He could range at will over the illimitable future. But the prospect, though unbounded, would not be exhilarating. No faintest tinge of optimism would colour his anticipations. Everything that happened, good or bad, would subtract something from the lessening store of useful energy, till a time arrived when nothing could happen any more, and the universe, frozen into eternal repose, would for ever be as if it were not.

Do our ideas of material evolution, thus corrected and supplemented, lend themselves easily to the argument from design? I hardly think so. It is true that in retrospect we can ideally reach a limit which no calculations, based upon physical laws, will permit us to overpass, and that where (what in old-fashioned language were called) "secondary causes" fail us, a First Cause may plausibly be invoked; but, if we gaze forward instead of backward, the physical course of nature does not merely fail to indicate design, it

seems loudly to proclaim its absence. A world where all energy suffers inevitable degradation, considered by itself, appears atheistic on the face of it: nor can even life consciousness or thought redeem it, if they, too, are doomed to perish when further transformations of energy become impossible.

It is not, therefore, on any general survey of material nature that, in the present state of our knowledge, we can base the argument from "design." Nor is this the foundation on which those who use the argument have chiefly built. They have always sought for proofs of contrivance rather among the living than among the dead. In the intricate adjustment of different parts of an organism to the interests of the whole; in the adaptation of that whole to its environment, they found the evidence they required. Arrangements which so irresistibly suggested purpose could not (they thought) be reasonably attributed to chance.

This argument possessed immense force in what was, comparatively speaking, the infancy of biology. Has that force been lessened by the growth of knowledge? Yes and No. If we consider organic adaptations and adjustments in themselves, scientific discovery has

increased a thousand-fold our sense of their exquisite niccty and their amazing complexity. 'I take it as certain that, had no such theory as Natural Selection been devised, nothing would have persuaded mankind that the organic world came into being unguided by intelligence.' Chance, whatever chance may mean, would never have been accepted as a solution. Agnosticism would have been scouted as stupidity.

All this has been changed, as every one knows, by Darwin. But what exactly was it that, in this connection, Darwin did? He is justly regarded as the greatest among the founders of the doctrine of organic evolution; but there is nothing in the mere idea of organic evolution which is incongruous with design. On the contrary, it almost suggests guidance, it has all the appearance of a plan. Why, then, has Natural Selection been supposed to shake teleology to its foundation?

'The reason, of course, is that though the fact of Selection does not make it harder to believe in design, it makes it easier to believe in accident; and, as design and accident are the two mutually exclusive alternatives between which the argument from design requires us to choose, this comes to the same

thing. Before Darwin's great discovery those who denied the existence of a Contriver were hard put to it to explain the appearance of contrivance. Darwin, within certain limits and on certain suppositions, provided an explanation. He showed how the most complicated and purposeful organs, if only they were useful to the species, might gradually arise out of random variations, continuously weeded by an unthinking process of elimination. Assume the existence of living organisms, however simple, let them multiply enough and vary enough, let their variations be heritable, then, if sufficient time be granted, all the rest will follow. In these conditions, and out of this material, blind causation will adapt means to ends with a wealth of ingenuity which we not only cannot equal, but which we are barely beginning to comprehend.[1]

[1] As I shall often have to mention "selection" in the course of these lectures, I must observe that it is no part of my business to weigh the comparative merits of competing evolutionary theories. It may be that the hypothesis of small random variations accumulated or eliminated according as they help or hinder survival, is, in the light of recent research, insufficient and unsatisfactory. From my point of view this is immaterial. I use the word "selection" as a convenient name for any non-rational process, acting through heredity, which successfully imitates contrivance. Darwin's theory, be it true or false, still provides, I suppose, the only suggestion as to how this feat may be accom-

The theory of selection thus destroys much of the foundation on which, a hundred years ago, the argument from design was based. What does it leave untouched?

It leaves untouched all that can be inferred from the existence of the conditions which make organic evolution possible: matter which lives, multiplies, and varies; an environment which possesses the marvellously complex constitution required to make these processes possible. Selection may modify these conditions, but it cannot start them. It may modify the manner in which multiplication is secured; it may modify the lines which variations follow; it may enable organic species to adapt their powers to their environment, and (within narrow limits) their environment to their powers. But it cannot produce either the original environment or the original living matter. These must be due either to luck or to contrivance; and, if they be due to luck, the luck (we must own) is great. How great we cannot say. We cannot measure the improbability of a fortuitous arrangement of molecules producing not merely living matter, but living matter of the

plished, and his terminology may be used without danger of misunderstanding.

right kind, living matter on which selection can act. Here, indeed, Laplace's calculator might conceivably help us. But suppose him to have done so, suppose him to have measured the odds against the accidental emergence of the desired brand of protoplasm, how are we to compare *this* probability with its assumed alternative—intelligent design? Here, I think, even Laplace's calculator would fail us; for he is only at home in a material world governed by mechanical and physical laws. He has no principles which would enable him to make exhaustive inferences about a world in which other elements are included: and such a world is ours.

For a Greek philosopher to assert that the world is material was legitimate enough. He was in search of a universal principle; and if he found it in matter we need neither wonder nor criticise. After all, matter lies round us on every side; we are immersed in it; we are largely dependent on it. It may well seem but a small step further, and a very natural one, to treat it as the essence of all that is.

But, as it seems to me, we now know too much about matter to be materialists. The philosophical difficulties in the way of accepting

a materialistic world-system are notorious—at least to philosophers. But I am not speaking of them. I am thinking of the scientific difficulties, those that cannot but suggest themselves when we consider the breach of continuity involved in the appearance of life, and still more obviously of feeling, at particular points in the long procession of material causes and effects. The very essence of the physical order of things is that it creates nothing new. Change is never more than a redistribution of that which never changes. But sensibility belongs to the world of consciousness, not to the world of matter. It is a new creation, of which physical equations can give no account; nay, rather, which falsifies such equations; which requires us to say that, before a certain date in the history of the universe, energy in one shape was converted into precisely the same amount of energy in another shape, and into nothing more; that matter in one position was transferred to another position without increase or diminution: but that, after this date, the transformations of energy and the movements of matter were sometimes accompanied by psychical "epiphenomena" which differ from them in kind, which are incommensurable

with them in amount, and which no equations can represent.

Babbage, in order to show how occasional "miracles" might "naturally" break the continuity of the longest sequences, devised a machine which produced numbers according to a particular law for an indefinite period, then broke this uniformity by a single exception, and, thereafter, reverted for ever to its original principle of action. But Babbage's results, however startling, depended wholly on known mathematical and mechanical laws. Their irregularity was only apparent. To Laplace's calculator, they would have seemed not merely inevitable but obvious. It is quite otherwise with the appearance and disappearance of feeling, thought, will, consciousness in general, within the strictly determinal series of mechanical causes and effects. Here the anomaly is real: the breach of continuity inexplicable by any physical laws and indeed incompatible with them. I am not at this moment concerned either to deny or to assert that at the critical frontier where mind and matter meet, the even course of nature suffers violence. I am not suggesting, for example, that, if a given physiological state were exactly repeated, the psychical state

formerly associated with it would not be repeated also. My point is different. It is that in a strictly determined physical system, depending on the laws of matter and energy alone, no room *has* been found, and no room *can* be found, for psychical states at all. They are novelties, whose intrusion into the material world cannot be denied, but whose presence and behaviour cannot be explained by the laws which that world obeys.

The difficulty is a very familiar one; and I cannot see that the progress either of science or philosophy has brought us nearer to its solution. But what (you may be disposed to ask) has it to do with the argument from design? At least this much:

Those who refuse to accept design do so because they think the world-story at least as intelligible without it as with it. This opinion is very commonly associated with a conception of the universe according to which the laws of matter and energy are sufficient to explain, not only all that is, but all that has been or that will be. If we thus know the sort of explanation which is sufficient to cover the facts, why (it is asked) should we travel further afield into the misty realms of theology or metaphysics?

But the explanation does not cover the facts, even when all has been conceded to the opponents of design that I, at least, am ready to concede. Grant that the inorganic world, considered in and for itself, does not suggest contrivance; grant that the contrivance which the organic world does undoubtedly suggest may in great part be counterfeit—there still remains a vast residue of fact quite recalcitrant to merely physical explanation. I will not argue whether in this residue we should or should not include life. It is enough that we must undoubtedly include feeling and all other phases of consciousness. We must include them, even if they be no more than the passive accompaniments of material change; still more must we include them if we speculatively accept (what I deem to be) the inevitable belief that they can, within limits, themselves initiate movement and guide energy. The choice, therefore, is not between two accounts of the universe, each of which may conceivably be sufficient. The mechanical account is not sufficient. It doubly fails to provide a satisfactory substitute for design. In the first place, it requires us to believe that the extraordinary combination of material conditions required for organic

life is due to hazard. In the second place, it has to admit that these material conditions are insufficient, and have somehow to be supplemented. We must assume, that is to say, an infinitely improbable accident, and, when we have assumed it, we are still unprovided with an explanation. Nay, the case is even worse—for the laws by whose blind operation this infinitely improbable accident has been brought about are, by hypothesis, mechanical; and, though mechanical laws can account for rearrangements, they cannot account for creation; since, therefore, consciousness is more than rearrangement, its causes must be more than mechanical.

To me, then, it seems that the common-sense "argument from design" is still of value. But, if it carries us beyond mechanical materialism, it must be owned that it does not carry us very far towards a religious theology. It is inconsistent with Naturalism: it is inconsistent with Agnosticism. But its demands would be satisfied by the barest creed which acknowledged that the universe, or part of it, showed marks of intelligent purpose. And, though most persons willing to accept this impoverished form of Theism will certainly ask for more, this is not because they are swept

forward by the inevitable logic of the argument, but because the argument has done something to clear a path which they were already anxious to pursue.

II

As the conclusions which I desire to establish are richer in contents than any which can be derived merely from marks of contrivance, so the method of arriving at them is essentially different. In the first place, it is based not upon considerations drawn from external nature, but from the mind and soul of man. Stress is laid, not upon contrivances, adjustments, and the happy adaptation of means to ends, but on the character of certain results attained. It is not an argument from design, but an argument from value. To emphasise the contrast, it might be called an argument *to* design. Value (we assert) is lost if design be absent. Value (you will ask) of what? Of our most valuable beliefs, (I answer) and of their associated emotions.

We are, no doubt, accustomed to connect the notion of value rather with things believed in, than with the beliefs of which they are the subjects. A fine symphony, an heroic

deed, a good dinner, an assured livelihood, have admitted values. But what values can we attribute to beliefs and judgments, except is so far as they are aids and instruments for obtaining valuable objects ?

This question, however, is based, as I think, upon an insufficient survey of the subject. We are in search of a world outlook. Creeds, therefore, are our concern. The inquiry with which these lectures are concerned is whether, among the beliefs which together constitute our general view of the universe, we should, or should not, include a belief in God. And to this question it is certainly relevant to inquire whether the elimination of such a belief might not involve a loss of value in other elements of our creed—a loss in which we are not prepared to acquiesce.

But how, you will ask, is this loss of value brought about ? What is the connection between a belief in God and a belief concerning (say) beauty, or goodness, or natural law ? Evidently the connection is not, in the ordinary sense, a logical one. Neither æsthetic, nor ethic, nor scientific judgments can be 'deduced' from Theism ; nor can Theism be 'deduced' from them. We are not dealing with premises and conclusions bound together

by a formal chain of inference. How, then, is our procedure to be described ?

In order to make this clear, I must call your attention to a double aspect possessed by all beliefs alike, whatever be the subject-matter with which they deal. All beliefs have a position, actually or potentially, in a cognitive series; all beliefs, again, have a position, known or unknown, in a causal series. All beliefs, in so far as they belong to the first kind of series, are elements in one or more collections of interdependent propositions. They are conclusions, or premises, or both. All beliefs, in so far as they belong to the second kind of series, are elements in the temporal succession of interdependent events. They are causes, or effects, or both.

It has, further, to be noted that whereas reasons may, and usually do, figure among the proximate causes of belief, and thus play a part in both kinds of series, it is always possible to trace back the causal series to a point where every trace of rationality vanishes; where we are left face to face with conditions of beliefs—social, physiological, and physical—which, considered in themselves, are quite a-logical in their character.

It is on this last point that I particularly

desire to insist. We are all very familiar with the equivocal origin of most human creeds. To be sure, we observe it chiefly in the case of other people. In our own case, we dwell by preference on those causes of our beliefs which are also reasons. But in our detached studies of the opinions we do not share, we easily perceive how insufficient are the arguments officially urged on their behalf, and how often even these insufficient arguments have only a nominal connection with the convictions of which they claim the legal paternity. We must, however, go yet one step further. We must realise that, on any merely naturalistic hypothesis, the rational elements in the causal series lie always on the surface. Penetrate but a short way down, and they are found no more. You might as easily detect life in the minerals wherein plants are rooted, as reason in the physiological and physical changes to which the source of our most carefully reasoned beliefs must, in the last resort, be traced.

Consider, for example, an extreme case—say a proposition of Euclid. Here we have a belief logically inferred from well-assured premises—so, at least, we were accustomed to suppose before mathematicians became so very fastidious in the matter of proof. Can we

not say that in this case the elements of the two series are in a sense identical, that all the causes for our belief are also reasons for it? Certainly we are not moved by prejudice, or affection, or authority. It is neither self-interest nor party passion that induces us to believe, for example, that the three angles of a triangle are equal to two right angles. Has our thought, then, in this case freed itself from the dominion of a-logical conditions? Is our belief the child of uncontaminated reason? I answer—No. Though the argument, *qua* argument, is doubtless independent of time, the argumentative process by which we are in fact convinced occurs in time, and, like all psychological processes, is somehow associated with physiological changes in the brain. These, again, are part of the general stream of physical happenings, which in themselves have nothing rational about them. Follow up this stream but a little further and every trace, not only of mind but of life, is completely lost; and we are left face to face with unthinking matter and its purposeless movements. Logical inference is thus no more than the reasoned termination of an unreasoning process. Scratch an argument, and you find a cause.

If this be admitted, the question at once arises whether we can treat the two kinds of series thus intimately connected as separable when we are estimating the values of the beliefs with which they are both associated. Is it permissible, is it even possible, to ignore the genesis of knowledge when we are considering its validity? Do not origins qualify values?

In many cases they notoriously do. A distinguished agnostic once observed that in these days Christianity was not refuted, it was explained. Doubtless the difference between the two operations was, in his view, a matter rather of form than of substance. That which was once explained needed, he thought, no further refutation. And certainly we are all made happy when a belief, which seems to us obviously absurd, is shown nevertheless to be natural in those who hold it.

But we must be careful. True beliefs are effects no less than false. In this respect magic and mathematics are on a level. Both demand scientific explanation; both are susceptible of it. Manifestly, then, we cannot admit that explanation may be treated as a kind of refutation. For, if so, the more successfully science carried out its explanatory task, the more completely would it shatter its own

principles. This way lies universal scepticism. Thus would all intellectual values be utterly destroyed.

But we have not to do with intellectual values alone. There are beliefs (as I have already said) round which crystallise complex emotions, æsthetic and ethic, which play no small part in our highest life. Without the beliefs the emotions would dwindle; without the emotions the beliefs would lose their worth. Though they do not imply each other in the world of logic, they are mutually necessary in the world of values. Here, of course, there is no question of a contrast between the logical and the causal series. Emotions are always effects; they are never inferences. In their case, therefore, the relation of value to origin is not obscured by considerations like those which must occupy us in the case of mere beliefs; and we have to face in a simpler and more direct form the central problem of these lectures: the problem of the relation which origin bears to value. It is with this branch of my subject as it is raised by æsthetic and by ethic emotions that I shall be mainly occupied in the next two lectures. And as in the later part of my course I shall contend that it is destructive of rational values to root them

in unreason, so I shall now contend that the emotional values associated with, and required by, our beliefs about beauty and virtue must have some more congruous source than the blind transformation of physical energy. If I am successful in my endeavour I shall have done something to show that "design" is demanded by all that we deem most valuable in life, by beauty, by morals, by scientific truth: and that it is design far deeper in purpose, far richer in significance, than any which could be inferred from the most ingenious and elaborate adjustments displayed by organic life.

PART II

ÆSTHETIC AND ETHICAL VALUES

LECTURE III

ÆSTHETIC AND THEISM

I

In this lecture I have undertaken to consider certain beliefs and emotions relating to beauty, and to inquire how far their value is affected by our views as to their origin.

The poverty of language, however, makes it rather difficult to describe with any exactness the scope of such an inquiry. Beauty is an ill-defined attribute of certain members of an ill-defined class; and for the class itself there is no very convenient name. We might describe its members as "objects of æsthetic interest" always bearing in mind that this description (as I use it) applies to objects of the most varying degrees of excellence—to the small as well as the great, the trifling as well as the sublime: to conjuring and dancing; to literature, art, and natural beauty.

It follows from this description that, while

all things of beauty possess æsthetic interest, not all things of æsthetic interest would in common parlance be described as beautiful.[1] They might, for example, display wit, or finish, or skill. They might, therefore, properly excite admiration. But beauty is a term whose use may well be confined to the qualities which excite only the highest forms of æsthetic interest, and it is thus I propose to employ it.

Now what are the characteristics which distinguish objects of æsthetic interest from interesting objects generally ? I will mention two.

In the first place, the value of æsthetic objects depends on the intrinsic quality of the emotions they arouse, and not upon the importance of any ulterior purpose which

[1] I greatly regret having to stretch the ordinary meaning of the word " æsthetic " to the extent required by the argument of this chapter. I got into trouble in a previous work by the extension I gave to the word " Authority." And as, in that case, no explanation seemed sufficient to avoid misconception, so I am afraid it will be in the present case.

But what better course is open to me ? I require a word to express a concept which is vital to the doctrines I am preaching. Where am I to get it ? If there is no such word in ordinary use, I must either invent a new word, or I must modify the familiar meaning of an old word. There are objections to both courses ; yet one of them must be taken. I have chosen the second ; and can do no more than ask for the indulgence of those readers who think I should have chosen the first.

they may happen to subserve. In the second place, the emotions themselves, whatever be their value, must be *contemplative*. They must not prompt to action or reach forward to any end. They must be self-sufficient, and self-contained.

Of course, I do not suggest that works of art are useless. A building may be beautiful, although it is also convenient. A sword most delicately damascened may be an admirable engine of destruction. We may even go further and admit that utility unadorned may have about it an æsthetic flavour. Nice adjustment and fitness exquisitely accomplished are without doubt agreeable objects of contemplation. But, in the first two of these cases, beauty is deliberately added to utility, not organically connected with it. An ill-proportioned building might have been equally fitted for its purpose; a plain sword might have been equally lethal. In the third case the connection between utility and æsthetic interest is organic, yet undesigned. From the very nature of the case it forms no part of the purpose for which the mechanism was contrived.

Again—when I say that æsthetic interest does not prompt to action, I am, of course,

speaking of those who enjoy, not of those who are laboriously trying to enjoy, still less of those who create what is to be enjoyed. It commonly requires effort, conscious and unconscious, to be a good spectator; it always requires effort to become a good artist. Yet these are no real exceptions to the principle. Æsthetic interests, once aroused, do not prompt to action; and it is, I conceive, of their essence that they should not. The most emotional spectator does not rush to save Desdemona from Othello; and, though tragedy may (or may not) purify by "pity and terror," the pity does not suggest a rescue, nor the terror urge to flight.

II

Now these characteristics of æsthetic emotions and beliefs raise problems of great interest. How came they to be what they are? To what causal process are they due? In the case of ethics (to anticipate a discussion that will occupy us in the next lecture) the earlier stages at least are seemingly due to selection. They lead to action, and to action which has survival value. But what survival value have æsthetic judgments and feelings

at any stage of culture? It is true that actions which are sometimes represented as primitive forms of artistic creation play their part in the drama of animal courtship. Some animals dance, some sing, some croak; some flaunt colours, some exhale smells. Apes (it seems) make inarticulate noises which (according to Spencer) were the humble beginnings, not only of speech, but of music. I own that to me this sort of explanation leaves our æsthetic interests quite unexplained. Grant, for the sake of argument that, were our knowledge sufficient, we could trace a continuous history of musical emotions from the simple satisfaction excited in the female ape by the howling of the male, down to the delicate delights of the modern musician, should we be nearer an answer to the problem of æsthetic causation? I doubt it. Certainly we should not have succeeded in coupling the development of our feelings for beauty to the general process of organic evolution. Before this can be satisfactorily accomplished it must be shown, not merely that the tastes of anthropoid apes are useful to anthropoid apes, but that the tastes of men are useful to men, and in particular that the tastes of civilised men are useful to civilised men.

Nor would even this be enough unless usefulness be carefully defined in terms of survival value. It must, in other words, be shown that communities rich in the genius which creates beauty and in the sensibility which enjoys it, will *therefore* breed more freely and struggle more successfully than their less gifted neighbours. And I am not aware that any attempt to establish such a doctrine has ever been seriously undertaken.

But, if so, our æsthetic sensibilities must be regarded (from the naturalistic standpoint) as the work of chance. They form no part of the *quasi* design which we attribute to selection; they are unexplained accidents of the evolutionary process. This conclusion harmonises ill with the importance which civilised man assigns to them in his scheme of values. On this point, at least, there reigns a singular unanimity. However people may differ as to what we should admire, all are agreed that we should admire something. However they may differ about the benefits to be derived from æsthetic, all are agreed that the benefits are great. The pessimist finds in art the solitary mitigation of human miseries. A certain type of agnostic treats it as an undogmatic substitute for religion.

He worships beauty, but nothing else; and expects from it all the consolations of religious experience without the burdens of religious belief. Even those who would refuse to art and literature this exalted position, are prepared to praise them without stint. They regard the contemplative study of beautiful things as a most potent instrument of civilisation; in countless perorations they preach its virtues; delicacy of æsthetic discrimination they deem the surest proof of culture, and the enjoyment of æsthetic excellence its highest reward.

The case is apparently, but not really, different when we turn from beauty to the minor æsthetic interests—the popular novel, the music-hall song, the cricket-match (as spectacle), the cinematograph, and so forth. Nobody, it is true, greatly praises these things, but multitudes greatly enjoy them. The space they occupy in the life of the community has increased beyond computation. As locomotion becomes easier and leisure greater that space will increase yet more. This may be good or bad; but none will deny that it is important. What a paradox this seems! Theories of selection were devised to explain the complex structures and the

marvellous adjustments of the organic world without needlessly postulating design. We should think but poorly of them if they accounted for some organs by methods quite inapplicable to others—if they showed us, for example, how the eye had developed, but appealed to some wholly different principle (say special creation) when they set to work on the ear; or taught that the nose must be regarded as an evolutionary accident not to be explained on any general principle at all. If what required explanation was of small biological importance, this last hypothesis would not seem perhaps startling. The most convinced selectionist is not obliged to suppose that selection eliminates everything which does not make for survival. Useless variations may be spared if they be harmless. Even harmful variations may be spared if they be linked to variations so advantageous that their joint effect proves beneficial on balance. But is this the case with æsthetic? Are we to treat as unconsidered trifles our powers of enjoying beauty and of creating it? Can we be content with a world-outlook which assigns to these chance products of matter and motion so vast a value measured on the scale of culture, and no value worth

counting measured on the scale of race survival? If design may ever be invoked where selection fails and luck seems incredible, surely it may be invoked here.

III

These observations are applicable, more or less, to the whole body of our æsthetic interests —whether they be roused by objects we deem relatively trivial, or by objects which are admittedly rare and splendid. But while neither fit comfortably into a purely naturalistic framework, it is only the second which, in virtue of their intrinsic quality, demand a source beyond and above the world of sense perception. Here, then, we are face to face with a new question. So far we have been concerned to ask whether that which is admittedly valuable can be plausibly attributed to chance. Now we must ask whether that which is attributed to chance can thereafter retain its value. Of these questions the first is germane to the ordinary argument from design. It is the second which chiefly concerns us in these lectures.

Perhaps an affirmative answer may seem to have been already given by implication.

The admission that the second problem only touches the highest values in the æsthetic scale may be thought to render the whole inquiry vain. And the admission cannot be avoided. No one supposes that when we are looking (for example) at an acrobat, it matters in the least what we think of the universe. Our beliefs and disbeliefs about the Cosmic order will not modify either in quantity or quality such satisfaction as we can derive from the contemplation of his grace and agility. Where, then, it will be asked, do we reach the point in the æsthetic scale at which values begin to require metaphysical or theological postulates? Is it the point where beauty begins? If so, who determine where this lies; and by what authority do they speak?

Evidently we are here on difficult and delicate ground. On questions of taste there is notoriously the widest divergence of opinion. Nor, if we regard our æsthetic interests simply as the chance flotsam and jetsam of the evolutionary tides, could it well be otherwise. If there be practically no "limits of deviation" imposed by selection; if, from a survival point of view, one taste be as good as another, it is not the varieties in taste which should cause surprise so much as the uniformities.

To be sure, the uniformities have often no deep æsthetic roots. They represent no strong specific likes and dislikes shared by all men at a certain stage of culture, but rather tendencies to agreement (as I have elsewhere called them), which govern our social ritual, and thereby make social life possible. We rail at "fashion," which by an unfelt compulsion drives multitudes simultaneously to approve the same dresses, the same plays, the same pictures, the same architecture, the same music, and the same scenery. We smile at the obsequious zeal with which men strive to admire what the prophets of the moment assure them is admirable. But admitting, as I think we must, that these prophets neither possess any inherent authority, nor can point to any standard of appeal, we must also admit that if in Art there were no orthodoxies, if the heresies themselves were unorganised, if every man based his æsthetic practice on a too respectful consideration of his own moods and fancies, the world we live in would be even more uncomfortable than it is.

However this may be, it is clear that this second portion of my argument, which is not based, like the first, on any objective survey of the part played in human affairs by general

æsthetic interests, has special difficulties to surmount. For it rests on experiences of high emotion rare for all, unknown to many, roused in different men by different objects. How can any conclusions be securely based on foundations at once so slender and so shifting ?

I agree that the values dealt with in this part of the argument are not values for everybody. Yet everybody, I think, would be prepared to go some way in the direction I desire. They would acknowledge that, in art, origin and value cannot be treated as independent. They would agree that those who enjoy poetry and painting must be at least dimly aware of a poet beyond the poem and a painter beyond the picture. If by some unimaginable process works of beauty could be produced by machinery, as a symmetrical colour pattern is produced by a kaleidoscope, we might think them beautiful till we knew their origin, after which we should be rather disposed to describe them as ingenious. And this is not, I think, because we are unable to estimate works of art as they are *in themselves*, not because we must needs buttress up our opinions by extraneous and irrevelant considerations ; but rather because a work of art requires an artist,

not merely in the order of natural causation, but as a matter of æsthetic necessity. It conveys a message which is valueless to the recipient, unless it be understood by the sender. It must be expressive.

Such phrases are no doubt easily misunderstood. Let me, therefore, hasten to add that by an "expressive" message I do not mean a message which can be expressed in words. A work of art can never be transferred from one medium into another, as from marble to music. Even when words are the medium employed, perfect translation is impossible. One poet may paraphrase, in a different language, the work of another; and a new work of art may thus be produced. But however closely it follows the original, it will never be the same. On the other hand, if the medium used be (for example) colour, or sound, or stone, the work of art cannot be translated into words at all. It may be described; and the description may better the original. Yet it cannot replace it. For every work of art is unique; and its meaning cannot be alternatively rendered. But are we, therefore, to conclude that it has no meaning? Because its message cannot be translated, has it therefore no message? To put these questions is to answer them.

Many people, however, who would travel with me so far would refuse to go further. They would grant that a work of art must be due to genius, and not, in the first instance, to mechanism or to chance. But whether, in the last resort, mechanism or chance has produced the genius, they would regard as, from the æsthetic point of view, quite immaterial. Music and poetry must have a personal source. But the musician and the poet may come whence they will.

And perhaps, in very many cases, this is so; but not, I think, in all, nor in the highest. If any man will test this for himself, let him recall the too rare moments when beauty gave him a delight which strained to its extremest limit his powers of feeling; when not only the small things of life, but the small things of Art—its technical dexterities, its historical associations—vanished in the splendour of an unforgettable vision; and let him ask whether the attribution of an effect like this to unthinking causes, or to an artist created and wholly controlled by unthinking causes, would not go far to impair its value.

To such an appeal it is not difficult to raise objections. It may be said, for example, that, under the stress of emotions like those I have

described, no man troubles his head about problems of cosmology; thought is merged in feeling; speculation is smothered. But though this is true, it is not wholly true. As no pain, I suppose, is so intense as to exclude all reflections on its probable duration, so no rapture is so absorbing as to exclude all reflections on its probable source. I grant that at such moments we do not philosophise; we do not analyse a problem, turning it this way or that, and noting every aspect of it with a cool curiosity. Nevertheless, for those accustomed to reflect, reflection is never wholly choked by feeling. Nor can feeling, in the long run, be wholly unaffected by reflection.

Again, it may be said that such moments too seldom occur in any man's experience to justify even the most modest generalisations—let alone generalisations that embrace the universe. But this objection seems to rest on a misapprehension. We must remember that the argument from æsthetic values is not a scientific induction or a logical inference. There is here no question of truth and falsehood, or even of good taste and bad taste. We are not striving to isolate what is essential to beauty by well-devised experiments; nor are we concerned with psycho-physical determination of the normal

relation between feeling and stimulus. If it be urged that some particular example of deep æsthetic emotion quite outruns the merits of its object, so that sound canons of criticism require its value to be lowered, we need not deny it. We are not dealing with sound canons of criticism; though I may observe, in passing, that if they lower emotional values in one direction without raising them in others, good taste becomes a somewhat costly luxury. My point is different. I am not appealing to all men, but only to some men —to those and to those only who, when they explicitly face the problem, become deeply conscious of the incongruity between our feelings of beauty and a materialistic account of their origin.

The extreme individualism of this point of view may seem repulsive to many. Are the feelings (they will ask) of some transient moment to be treated as authentic guides through the mysteries of the universe, merely because they are strong enough to overwhelm our cooler judgment? And, if so, how far is this method of metaphysical investigation to be pressed? Are we, for example, to attach transcendental value to the feelings of a man in love? There is evidently a close, though

doubtless not a perfect, parallel between the two cases. It is true that love is rooted in appetite, and that appetite has a survival value which I, at least, cannot find in the purely contemplative emotions. But romantic love goes far beyond race requirements. From this point of view it is as useless as æsthetic emotion itself. And, like æsthetic emotion of the profounder sort, it is rarely satisfied with the definite, the limited, and the immediate. It ever reaches out towards an unrealised infinity. It cannot rest content with the prose of mere fact. It sees visions and dreams dreams which to an unsympathetic world seem no better than amiable follies. Is it from sources like these—the illusions of love and the enthusiasms of ignorance—that we propose to supplement the world-outlook provided for us by sober sense and scientific observation ?

Yet why not ? Here we have values which by supposition we are reluctant to lose. Neither scientific observation nor sober sense can preserve them. It is surely permissible to ask what will. And if Naturalism be inimical to their maintenance, the fact should at least be noted.

It is true, no doubt, that these high-wrought

feelings have worse enemies even than naturalism. When the impassioned lover has sunk into a good husband, and the worshipper of beauty has cooled into a judicious critic, they may look back on their early raptures with intelligent disdain. In that event there are for them no values to be maintained. They were young, they were foolish, they made a mistake, and there is no more to be said. But there is a higher wisdom. Without ignoring what experience has to teach, they may still believe that through these emotions they have obtained an authentic glimpse of a world more resplendent and not less real than that in which they tramp their daily round. And, if so, they will attribute to them a value independent of their immediate cause—a value which cannot be maintained in a merely naturalistic setting.[1]

This may seem a doctrine too mystical to suit the general tenor of these lectures. Let me, therefore, hasten to add that our ordinary and repeatable experiences of beauty seem to point in the same direction as these rarer and more intense emotions. It is, of course, true that even about these we cannot generalise as we may (for example) about the external

[1] Cf. Plato in the "Phædrus."

world. We cannot, I mean, assume that there is a great body of æsthetic experience which all normal persons possess in common. There is always something about our feeling for beautiful things which can neither be described nor communicated, which is unshared and unshareable. Many normal persons have no such feelings, or none worth talking about. Their æsthetic interests may be great, but they lie at a lower level of intensity. They do not really care for beauty. Again, there are many who do care, and care greatly, who would yet utterly repudiate the doctrine that the highest æsthetic values were in any sense dependent on a spiritual view of the universe. The fact that so much of the greatest art has been produced in the service of religion they would not regard as relevant. They would remind us that one great poet at least has been a passionate materialist; that many have been pessimists; that many have been atheists; that many have been in violent revolt against the religion of their age and country. Of these we cannot say that their art suffered from their opinions, for we cannot imagine what their art would have been like had their opinions been different. Neither can we say that the readers who

shared their opinions, became, thereby, less qualified to enjoy their art. Such a paradox would be too violent. How, then (the objectors may ask), are facts like these to be harmonised with the views I am recommending?

Probably they cannot be harmonised. We are confronted with a difference of temperament which must be accepted as final. Yet the contradiction may often be less than at first appears. In the case which I brought forward just now, strong æsthetic emotion was assumed to carry with it, both at the crisis of immediate experience and yet more in periods of reflective retrospect, a demand for some cause emotionally adequate to its effect. In other words, it was assumed that such an experience suggested the question—whence comes it? of matter? or of spirit? and required the answer—if it be not born of spirit it is little, or it is naught.

But in many cases this answer is not given because the question is not asked; or, if it be asked, is misunderstood. And there are many reasons why it should not be asked; and many why it should be misunderstood.

For there are two things which must, in this connection, be remembered. The first is that materialism has never been the pre-

vailing creed among lovers of beauty. The second is that though (as I contend) a deep-lying incongruity infects theories which trace the ultimate genesis of beauty exclusively to causes which neither think, nor feel, nor will, such theories involve no contradiction, nor can those who hold them be taxed with inconsistency. There is, therefore, little in the ordinary routine of artistic criticism which raises the point which we are now discussing. A critic examining some artistic whole—a picture, a poem, a symphony—is much occupied in separating out the elements which contribute to the total effect, and in observing their character, value, and mutual relations. But it is only when we cease to analyse, when we contemplate, directly or in retrospect, the whole *as* a whole, that the problem of origin arises; and even then it need never become explicit. It may remain in the shape of an unsatisfied longing for a spiritual reality beyond the sensuous impression, or of a vaguely felt assurance that the spiritual reality is there. And in neither case has it developed into a question definitely presented—and pressing for a definite reply.

While, then, I am quite ready to believe that there are many persons whose enjoyment

of beauty is quite independent of their world outlook, I am also convinced that there are some who count themselves among the number only because they have never put the matter to the proof. It may be that they have given but little thought to questions of theology or metaphysics. It may be that they are pantheists after the manner of Shelley, or pessimists after the manner of Schopenhauer. Perhaps, again, they hold one or other of the theosophies which pass current in the West as the esoteric wisdom of the East. In any case, they are averse from orthodoxy, or what they regard as such. A lover of the beautiful belonging to any type like these, if asked whether his estimate of æsthetic values depended on his creed, might easily miss the point of the inquiry, and his negative reply would be worthless. Let the question, therefore, be put in different terms. Let him be asked whether beauty would not lose value for him if his world-outlook required him to regard it as a purposeless accident; whether the æsthetic delights which he deems most exquisite would not be somewhat dimmed if reflection showed them to be as vain, as transitory, though not so useful, as the least considered pleasures of sense. If he replies in

the negative, there is no more to be said. This lecture is not addressed to him. But I believe there are many to whom such an answer would be profoundly unsatisfying; and they, at least, can hardly deny that æsthetic values are in part dependent upon a spiritual conception of the world we live in.

IV

So far I have been considering art and the beauty expressed by art. But there are two kinds of æsthetic interest, which, though not artistic in the ordinary sense of the word, are so important that something must be said about them before this lecture closes.

The first of these is natural beauty. Hegel, if I rightly understand him, altogether excluded this from the sphere of æsthetic. For him the point of importance was Spirit—the Idea—expressing itself in art; and since nature is not spirit, nor natural beauty art, the exclusion was logical. For me, on the other hand, the main thing is feeling roused by contemplation; and particularly feeling at its highest level of quality and intensity. Natural beauty, therefore, cannot be ignored;

since no feelings of contemplation possess higher quality, or greater intensity, than those which natural beauty can arouse.

Evidently, however, there is, even from my point of view, a great difference between beauty in art and beauty in nature. For, in the case of nature, there is no artist; while, as I observed just now, "a work of art requires an artist, not merely in the order of natural causation, but in the order of æsthetic necessity. It conveys a message which is valueless to the recipient unless it be understood by the sender. It must be significant."

Are we, then, to lay down one rule for artistic beauty and another rule for natural beauty? Must the first be expressive, but not the second? Is creative mind necessary in one case, and superfluous in the other? And if in the case of nature it be necessary, where is it to be found? On the naturalistic hypothesis, it is not to be found at all. The glory of mountain and of plain, storm and sunshine, must be regarded as resembling the kaleidoscopic pattern of which I just now spoke; with this difference only—that the kaleidoscope was designed to give *some* pattern, though no one pattern more than another; while nature was not designed with any

intention at all, and gives us its patterns only by accident.

I know not whether you will think that this train of thought is helped or hindered by bringing it into relation with our scientific knowledge of natural realities. The world which stirs our æsthetic emotions is the world of sense, the world as it appears. It is not the world as science asks us to conceive it. This is very ill-qualified to afford æsthetic delight of the usual type; although the contemplation of complicated relations reduced to law may produce an intellectual pleasure in the nature of æsthetic interest. Yet none, I think, would maintain that mass and motion abstractly considered, nor any concrete arrangement of moving atoms or undulating ether, are beautiful as represented in thought, or would be beautiful could they become objects of perception. We have a bad habit of saying that science deals with nothing but "phenomena." If by phenomena are meant appearances, it is to æsthetics rather than to science that, on the principle of Solomon's judgment, phenomena most properly belong. To get away from appearances, to read the physical fact behind its sensuous effect, is one chief aim of science; while to put the

physical fact in place of its sensuous effect would be the total and immediate ruin of beauty both in nature and in the arts which draw on nature for their material. Natural beauty, in other words, would perish if physical reality and physical appearance became one, and we were reduced to the lamentable predicament of perceiving nature as nature is!

Now, to me, it seems that the feeling for natural beauty cannot, any more than scientific curiosity, rest satisfied with the world of sensuous appearance. But the reasons for its discontent are different. Scientific curiosity hungers for a knowledge of causes; causes which are physical, and, if possible, measurable. Our admiration for natural beauty has no such needs. It cares not to understand either the physical theories which explain what it admires, or the psychological theories which explain its admiration. It does not deny the truth of the first, nor (within due limits) the sufficiency of the second. But it requires more. It feels itself belittled unless conscious purpose can be found somewhere in its pedigree. Physics and psycho-physics, by themselves, suffice not. It longs to regard beauty as a revelation—a revelation from spirit to spirit, not from one kind of atomic agitation to the

"psychic" accompaniment of another. On this condition only can its highest values be maintained.[1]

V

There is yet one other subject of æsthetic interest on which I desire to say something before the course of these lectures carries me into very different regions of speculation. The subject I refer to is history.

That history has æsthetic value is evident. An age which is both scientific and utilitarian occasionally pretends to see in it no more than the raw material of a science called sociology, and a storehouse of precedents from which

[1] It is perhaps to this tendency we may (in part) attribute the eagerness with which poetry and fine art have used and abused the personifications of natural objects provided for them by primitive superstition. If not, it is curious that these tedious mythologies should have been cherished by poets long after they were abandoned by everybody else; and that we still use every expedient for endowing material nature with fictitious sympathies and powers. But it is, I think, an error to see nothing in such metaphors but a trick of style. They represent the same deep-rooted tendency which finds significance in such phrases as "Mother Earth," which has suggested certain poetic forms of Pantheism; or which gathers a vague, semi-spiritual consolation from the thought that, when we die, our bodies, resolved into their elements, may still share in the new manifestations of life which Nature (half personified) pours out in exhaustless profusion.

statesmen may draw maxims for the guidance of mankind. It may be all this, but it is certainly more. What has in the main caused history to be written, and when written to be eagerly read, is neither its scientific value nor its practical utility, but its æsthetic interest. Men love to contemplate the performances of their fellows, and whatever enables them to do so, whether we belittle it as gossip or exalt it as history, will find admirers in abundance.

Yet the difference between this subject of contemplative interest and those provided either by beauty in art or beauty in nature are striking.

In the first place, history is not concerned to express beauty. I do not deny that a great historian, in narrating some heroic incident, may rival the epic and the saga. He may tell a tale which would be fascinating even if it were false. But such cases are exceptional, and ought to be exceptional. Directly it appears that the governing preoccupation of an historian is to be picturesque, his narrative becomes intolerable.

This is because the interest—I mean the *æsthetic* interest—of history largely depends upon its accuracy; or (more strictly) upon its supposed accuracy. Fictitious narrative,

whether realistic or romantic, may suggest deeper truths, may tell us more about the heart of man, than all the histories that ever were written; and may tell it more agreeably. But fact has an interest, because it is fact; because it actually happened; because actual people who really lived and really suffered and really rejoiced caused it to happen, or were affected by its happening. And on this interest the charm of history essentially depends.

In this respect there is, I think, a certain analogy between the æsthetic interest aroused by history and that aroused by natural beauty. Our pleasure in a landscape is qualified if we discover ourselves to have been the victims of an optical delusion. If, for example, purple peaks are seen on a far horizon, the traveller may exclaim, "What beautiful mountains!" Something thereupon convinces him that the mountains are but clouds, and his delight suffers an immediate chill. But why? The mountains, it is true, proved unreal; but they had as much reality as mountains in a picture. Where lies the essential difference between a representation accidentally produced by condensed vapour and a representation deliberately embodied in paint and canvas? It is not to be found, as might be at first supposed,

in the fact that the one deceives us and the other does not. Were we familiar with this particular landscape, did we know that nothing but a level plain stretched before us to the limits of our vision, we might still feel that, if the clouds on the horizon were what they seemed to be, the view would gain greatly in magnificence. Here there is no deception and no shock of disillusionment. If, therefore, we remain dissatisfied, it is because in this case verisimilitude does not suffice us; we insist on facts.

It has, perhaps, not been sufficiently noticed that brute fact, truth as it is apprehended in courts of law, truth as it is given by an accurate witness speaking on oath, has for some purposes great æsthetic value. That it is all-important in the dealings between man and man would be universally conceded; that it has no importance either in fine art or imaginative literature, and no meaning in music or architecture, most people would be ready to admit. But that it possesses worth where no practical issues are involved, and that this worth is of the contemplative or æsthetic order, is perhaps not so easy of acceptance. Yet so it is. A tale which would be inexpressibly tedious if we thought it was (in the "law

court" sense) false may become of absorbing interest if we think it true. And this not because it touches morals or practice, not because it has theoretic interest or controversial importance, but in its own right and on its own merits.

Now this æsthetic quality is, it seems to me, required both from "natural beauty" and historic narrative; but if there is here a resemblance between them, in other respects they are profoundly different. Landscape appeals to us directly. I do not mean that our enjoyment of it, both in quality and quantity, is not largely due to the work of artists. Our tastes have, no doubt, been formed and our sensibilities educated by the interpretation of nature which we owe to painters and poets. But though this is true, it is also true that what we see and what we enjoy is not art but nature, nature at first hand, nature seen immediately, if not as she is, at least as she appears. In the case of history it is otherwise. Except when we happen to have been ourselves spectators of important events, there is always an artist to be reckoned with. It may be Thucydides. It may be Dr. Dryasdust. It may be a mediæval chronicler. It may be Mrs. Candour at the tea-table. But there is always some-

body; and though that somebody might repudiate the notion that his narrative was a work of art, yet he cannot evade responsibility for selection, for emphasis, and for colour. We may think him a bad artist, but, even in his own despite, an artist he is;—an artist whose material is not marble or sound, but brute fact.

There is another way in which the æsthetic interest of history characteristically differs from the interest we feel in beauty, whether of art or of nature. It is massive rather than acute. Particular episodes may indeed raise the most poignant emotions. But, broadly speaking, the long-drawn story of man and his fortunes stirs feelings which (to borrow a metaphor from physics) are great in quantity but of low intensity. So it comes about that, whereas in the case of art the emotions stand out prominently above their associated judgments, in the case of history the positions are commonly reversed.

Yet this need not be so; and in particular it need not be so when we are contemplating the historical process as a whole. Details are then merged in a general impression; and the general impression drives us beyond the limits of history proper into questions of

origin and purpose, into reflections about man and destiny, into problems of whence and whither. Speculations like these have an emotional as well as an intellectual value, which must be affected by the answers we give them.

Let me illustrate and explain. It is possible, indeed it is easy, to contemplate aspects of history with the coolest intellectual interest. In this mood we might, for instance, study the development of science and religion out of primitive magics and superstitions. In this mood we might observe the characteristics of the city state, or the growth and decay of feudalism, or the history of the Mongols. On the other hand, the interest often becomes tinged with stronger feelings when we sympathetically follow the changing fortunes of particular individuals or communities. We are then, as it were, spectators of a drama, moved by dramatic hopes and fears, dramatic likes and dislikes, dramatic " pity and terror." And our emotions are not merely those appropriate to drama; they have, besides, that special quality (already referred to) which depends on the belief that they are occasioned by real events in a world of real people.

But there is yet a third case to be considered, in which the two previous cases are

included and partially submerged. This occurs when the object of our contemplative interest is not episodic but general, not the fate of this man or that nation, this type of polity or that stage of civilisation, but the fate of mankind itself, its past and future, its collective destiny.

Now we may, if we please, treat this as no more than a chapter of natural history. Compared with the chapter devoted, let us say, to the Dinosaurs it no doubt has the disadvantage of being as yet unfinished, for the Dinosaurs are extinct, and man still survives. On the other hand, though the natural history of "Homo Sapiens" is incomplete, we may admit that it possesses a peculiar interest for the biologist; but this interest is scientific, not historical.

For what does historical interest require? Not merely "brute fact," but brute fact about beings who are more than animals, who look before and after, who dream about the past and hope about the future, who plan and strive and suffer for ends of their own invention; for ideals which reach far beyond the appetites and fears which rule the lives of their brother beasts. Such beings have a "natural history," but it is not with this that we are

concerned. The history which concerns us is the history of self-conscious personalities, and of communities which are (in a sense) self-conscious also. Can the contemplative values which this possesses, especially in its most comprehensive shape, be regarded as independent of our world-outlook ? Surely not.

Observe that history, so conceived, must needs compare faculty with desire, achievement with expectation, fulfilment with design. And no moralist has ever found pleasure in the comparison. The vanity of human wishes and the brevity of human life are immemorial themes of lamentation ; nor do they become less lamentable when we extend our view from the individual to the race. Indeed, it is much the other way. Men's wishes are not always vain, nor is every life too brief to satisfy its possessor. Only when we attempt, from the point of view permitted by physics and biology, to sum up the possibilities of collective human endeavour, do we fully realise the "vanity of vanities" proclaimed by the Preacher.

I am not, of course, suggesting that history is uninteresting because men are unhappy : nor yet that naturalism carries pessimism in its train. It may well be that if mankind could draw up a hedonistic balance-sheet, the

pleasures of mundane existence would turn out to be greater than its sufferings. But this is not the question. I am not (for the moment) concerned with the miseries of the race, but with its futility. Its miseries might be indefinitely diminished, yet leave its futility unchanged. We might live without care and die without pain; nature, tamed to our desires, might pour every luxury into our lap; and, with no material wish unsatisfied, we might contemplate at our ease the inevitable, if distant, extinction of all the life, feeling, thought, and effort whose reality is admitted by a naturalistic creed.

But how should we be advanced? What interest would then be left in the story of the human race from its sordid beginnings to its ineffectual end? Poets and thinkers of old dimly pictured a controlling Fate to which even the Olympian gods were subject. The unknown power, which they ignorantly worshipped, any text-book on physics will now declare unto you. But no altars are erected in its honour. Its name is changed. It is no longer called Fate or Destiny, but is known by a title less august if more precise, the law of energy-degradation, or (if you please) "the second law of thermo-dynamics." It

has become the subject of scientific experiment; the physicists have taken it over from the seers, and its attributes are defined in equations. All terrestrial life is in revolt against it; but to it, in the end, must all terrestrial life succumb. Eschatology, the doctrine of the last things, has lapsed from prophecy to calculation, and has become (at least potentially) a quantitative science.

And, from a scientific point of view, this is quite satisfactory. But it is not satisfactory when we are weighing the æsthetic values of universal history. Shakespeare, in the passionate indictment of life which he puts into the mouth of Macbeth, declares it to be "a tale told by an idiot, full of sound and fury," and (mark well the climax) "*signifying nothing.*" That is the point with which in this lecture we are chiefly concerned. It most clearly emerges when, in moments of reflection, we enlarge the circuit of our thoughts beyond the needs of action, and, in a mood untouched by personal hopes or fears, endeavour to survey man's destiny as a whole. Till a period within the memory of men now living it was possible to credit terrestrial life with an infinite future, wherein there was room for an infinite approach towards some, as yet,

unpictured perfection. It could always be hoped that human efforts would leave behind them some enduring traces, which, however slowly, might accumulate without end. But hopes like these are possible no more. The wider is the sweep of our contemplative vision the more clearly do we see that the rôle of man, if limited to an earthly stage, is meaningless and futile;—that, however it be played, in the end it "signifies nothing." Will any one assert that universal history can maintain its interest undimmed if steeped in the atmosphere of a creed like this?

Here, however, we are evidently nearing the frontier which divides æsthetic from ethic. Before I cross it, and begin a new subject, let me very briefly touch on a difficulty which may have occurred to some of my hearers.

The line of thought followed in the last section of this lecture assumes, or seems to assume, that our only choice lies between history framed in a naturalistic, and history framed in a theistic, setting. In the first case we have a world-outlook which forbids the attribution of permanent value to human effort; in the second case we have a world-outlook which requires, or, at the least, permits it. But are these the only alternatives?

What are we to say, for example, about those metaphysical religions which, whether they be described as theistic, pantheistic, or atheistic, agree in regarding all life as illusion, all desire as wretchedness, and deem the true end of man to be absorption in the timeless identity of the real? Such creeds have no affinity with naturalism. Philosophically they are in sharpest contrast to it. But even less than naturalism do they provide history with a suitable setting. For naturalism does, after all, leave untouched the interest of historical episodes, so long as they are considered out of relation to the whole of which they form a part. As we are content, in the realm of fiction, to bid farewell to the hero and heroine on their marriage, unmoved by anxieties about their children, so, in the realm of "brute fact," we may arbitrarily isolate any period we choose, and treat the story of it without reference to any theories concerning the future destiny of man. But this process of abstraction must surely be useless for those who think of the world in terms of the metaphysical religions to which I have referred. In their eyes all effort is inherently worthless, all desire inherently vain. Nor would they change their opinion even

were they persuaded that progress was real and unending; that effort and desire were building up, however slowly, an imperishable polity of super-men. For those who in this spirit face the struggling world of common experience the contemplative interest of universal history must be small indeed.

LECTURE IV

ETHICS AND THEISM

I

I TURN now from contemplation to action; from Æsthetics to Ethics. And in so doing I must ask permission to stretch the ordinary meaning of the term which I use to describe the subject-matter of the present lecture, as I have already stretched the meaning of the term which described the subject-matter of the last. "Æsthetics" there included much besides beauty; "Ethics" here will include much besides morality. As, under the first head, were ranged contemplative interests far lower in the scale than (for example) those of art, so I shall extend the use of the word "Ethics" till it embraces the whole range of what used to be called the "springs of action," from the loftiest love down to impulses which in themselves are non-moral, instinctive, even automatic.

The grounds for this procedure are similar

in both cases. I am mainly, almost exclusively, concerned with beliefs and emotions touching beauty and goodness. Yet it is important to remember that, considered as natural products, these shade off by insensible gradations into manifestations of life to which the words "belief" and "emotion" are quite inapplicable, where "beauty" and "goodness" have little meaning or none. And as this larger class, when concerned with action, has at present no better name, I may be permitted to describe it as ethical.

I am mainly concerned, however, with that higher part of the ethical scale which all would agree to call Moral, and with the debatable region immediately below it. Of purposive action, or what seems to be such, of a still lower type, I need say little—but we must never forget that it is there.

Morals, as I conceive them, are concerned with ends of action: and principally with *ultimate* ends of action. An end of action, in so far as it is ultimate, is one which is pursued for itself alone, and not as a means to some other end. Of course an end may be, and constantly is, both ultimate and contributory. It is sought for on its own account, and also as an instrument for procuring something

else. It is mainly in the first of these capacities, however, that it concerns morality.

For the purposes of this lecture I shall classify ultimate ends as either egoistic or altruistic—egoistic ends being those that are immediately connected with, or centred in, the agent; altruistic ends being those that are not. But I beg you to remember that this distinction does not correspond to that between right and wrong. Egoism is not necessarily vicious, nor is altruism necessarily virtuous. Indeed, as I shall have occasion to point out later, the blackest vices, such as cruelty and hatred, are often altruistic.

This is an unusual, though not, I think, an unreasonable, use of language. "Egoism" and "altruism" are terms historically associated with the moral theories which regard happiness as the only end of action, but are under the necessity of distinguishing between actions designed to secure the happiness of the agent and actions designed to secure the happiness of other people. I do not accept these theories, though I borrow their phraseology. Happiness may, or may not, be the highest of all ultimate ends, the one to which all others should give way. But it seems to me quite misleading to call it the only one. To describe

the sensual man, the vain man, the merely selfish man, the miser, the ascetic, the man moved by rational self-love, the man absorbed in the task of "self-realisation," the man consumed by the passion for posthumous fame, as all pursuing the same egoistic end by different means, is surely to confuse distinctions of great moral importance without any gain of scientific clarity. In like manner, to suppose that the man who spends himself in the service (say) of his family, his country, or his church, is only striving for the "happiness" of the human race, or of certain selected members of the human race, is (it seems to me) to ignore the plain teaching of daily experience. As there are many egoistic ends besides our own happiness, so there are many altruistic ends besides the happiness of others. The extended sense, therefore, in which I employ these terms seems justified by facts.

II

I shall not attempt to determine the point at which we can first clearly discriminate between the "egoistic" and "altruistic" elements in animal instinct. Evidently, however, it is anterior to and independent of any

conceptual recognition either of an *ego* or an *alter*. It might be argued that there is an altruistic element in the most egoistic instincts. Eating, multiplying, fighting, and running away—acts plainly directed towards preserving and satisfying the individual—also conduce to the preservation of the race. But, however this may be, the converse is certainly untrue. There are altruistic instincts into which no element of egoism enters. Of these the most important is parental, especially maternal, love: the most amazing are the impulses which regulate the complex polity of (for example) a hive of bees. In these cases one organism will work or fight or endure for others: it will sacrifice its life for its offspring, or for the commonwealth of which it is a member. Egoism is wholly lost in altruism.

Now, I suppose that, in the order of causation, all these animal instincts, be they egoistic or altruistic, must be treated as contrivances for aiding a species in the struggle for existence. If *anything* be due to selection, surely *these* must be. This is plainly true of the egoistic appetites and impulses on which depend the maintenance of life and its propagation. It must also be true of the altruistic instincts. Take, for instance, the case of

parental devotion. Its survival value is clearly immense. The higher animals, as at present constituted, could not exist without it; and though, for all we can say to the contrary, development might have followed a different course, and a race not less effectively endowed than man might flourish though parental care played no greater part in the life-history of its members than it does in the life-history of a herring, yet this is not what has actually happened. Altruistic effort, in the world as we know it, is as essential to the higher organisms as the self-regarding instincts and appetites are to organic life in general; and there seems no reason for attributing to it a different origin.

Can this be said with a like confidence about the higher portions of the ethical scale? Are these also due to selection?

Evidently the difference between primitive instincts and developed morality is immense; and it is as great in the egoistic as in the non-egoistic region of ethics. Ideals of conduct, the formulation of ends, judgments of their relative worth, actions based on principles, deliberate choice between alternative policies, the realised distinction between the self and other personalities or other centres of feeling—

all these are involved in developed morality, while in animal ethics they exist not at all, or only in the most rudimentary forms.

Compare, for instance, a society of bees and a society of men. In both there is division of labour; in both there is organised effort towards an end which is other and greater than the individual good of any single member of the community. But though there are these deep-lying resemblances between the two cases, how important are the differences which divide them! In the bee-hive altruism is obeyed, but not chosen. Alternative ends are not contrasted. No member of the community thinks that it could do something different from, and more agreeable than, the inherited task. Nor in truth could it. General interest and individual interest are never opposed, for they are never distinguished. The agent never compares, and therefore never selects.

Far different are the ethical conditions requiring consideration when we turn from bees to men. Here egoism and altruism are not only distinguished in reflection; they may be, and often are, incompatible in practice. Nor does this conflict of ends only show itself *between* these two great ethical divisions; it

is not less apparent *within* them. Here, then, we find ourselves in a world of moral conflict very faintly foreshadowed in animal ethics. For us, ultimate ends are many. They may reinforce each other, or they may weaken each other. They may harmonise, or they may clash. Personal ends may prove incompatible with group ends: one group end may prove incompatible with another. Loyalty may be ranged against loyalty, altruism against altruism; nor is there any court of appeal which can decide between them.

But there are yet other differences between the ethics of instinct and the ethics of reflection. Instincts are (relatively) definite and stable; they move in narrow channels; they cannot easily be enlarged in scope, or changed in character. The animal mother, for example, cares for its young children, but never for its young grandchildren. The lifelong fidelity of the parent birds in certain species (a fidelity seemingly independent of the pairing season, or the care of particular broods) never becomes the nucleus of a wider association. Altruistic instincts may lead to actions which equal, or surpass, man's highest efforts of abnegation; but the actions are matters of routine, and the instincts never vary. They emerge in the

same form at the same stage of individual growth, like any other attribute of the species —its colour, for instance, or its claws. And if they be, like colour and claws, the products of selection, this is exactly what we should expect. But then, if the loyalties of man be also the product of selection, why do they not show a similar fixity ?

Plainly they do *not*. Man inherits the capacity for loyalty, but not the use to which he shall put it. The persons and causes (if any) to which he shall devote himself are suggested to him, often, indeed, imposed upon him, by education and environment. Nevertheless, they are his by choice, not by hereditary compulsion. And his choice may be bad. He may unselfishly devote himself to what is petty or vile, as he may to what is generous and noble. But on the possibility of error depends the possibility of progress ; and if (to borrow a phrase from physics) our loyalty possessed as few " degrees of freedom " as that of ants or bees, our social organisation would be as rigid.

The most careless glance at the pages of history, or the world of our own experience, will show how varied are the forms in which this capacity for loyalty is displayed. The

Spartans at Thermopylæ, the "Blues" and the "Greens" at Byzantium, rival politicians in a hard-fought election, players and spectators at an Eton and Harrow Match, supply familiar illustrations of its variety and vigour. And do not suppose that in thus bringing together the sublime, the familiar, and the trivial, I am paradoxically associating matters essentially disparate. This is not so. I am not putting on a moral level the patriot and the partisan, the martyr to some great cause and the shouting spectator at a school match. What I am insisting on is that they all have loyalty in common; a loyalty which often is, and always may be, pure from egoistic alloy.

Loyalties, then, which are characteristically human differ profoundly from those which are characteristically animal. The latter are due to instincts which include both the end to be sought for and the means by which it is to be attained. The former are rooted in a general capacity for, or inclination to, loyalty, with little inherited guidance either as to ends or means. Yet, if we accept selection as the source of the first, we can hardly reject it as the source of the second. For the survival value of loyalty is manifest. It

lies at the root of all effective co-operation. Without it the family and tribe would be impossible; and without the family and the tribe, or some yet higher organisation, men, if they could exist at all, would be more helpless than cattle, weak against the alien forces of nature, at the mercy of human foes more capable of loyalty than themselves. A more powerful aid in the struggle for existence cannot easily be imagined.

We are indeed apt to forget how important are its consequences, even when it supplies no more than a faint qualification of other and more obvious motives. It acts like those alloys which, in doses relatively minute, add strength and elasticity even to steel. The relation (for example) between a commercial company and its officials is essentially a business one. The employer pays the market price for honesty and competence, and has no claim to more. Yet that company is surely either unfortunate or undeserving whose servants are wholly indifferent to its fortunes, feeling no faintest flicker of pride when it succeeds, no tinge of regret when it fails. Honourable is the tie between those who exchange honest wage and honest work; yet loyalty can easily better it. And a like truth

is manifest in spheres of action less reputable than those of commerce. Mercenaries, to be worth hiring, must be partly moved by forces higher than punishment or pay. Even pirates could not plunder with profit were their selfishness unredeemed by some slight tincture of reciprocal loyalty.

There are, however, many who would admit the occasional importance of loyalty while strenuously denying that social life was wholly based upon it. For them society is an invention; of all inventions the most useful, but still only an invention. It was (they think) originally devised by individuals in their individual interest; and, though common action was the machinery employed, personal advantage was the end desired. By enlightened egoism social organisation was created; by enlightened egoism it is maintained and improved. Contrivance, therefore, not loyalty, is the master faculty required.

This is a great delusion—quite unsupported by anything we know or can plausibly conjecture about the history of mankind. No one, indeed, doubts that deliberate adaptation of means to ends has helped to create, and is constantly modifying, human societies; nor yet that egoism has constantly perverted

political and social institutions to merely private uses. But there is something more fundamental to be borne in mind, namely, that without loyalty there would be no societies to modify, and no institutions to pervert. If these were merely well-designed instruments like steam-engines and telegraphs, they would be worthless. They would perish at the first shock, did they not at once fall into ruin by their own weight. If they are to be useful as means, they must first impose themselves as ends; they must possess a quality beyond the reach of contrivance: the quality of commanding disinterested service and uncalculating devotion.

III

'I should therefore be ready to admit, as a plausible conjecture, that the capacity for altruistic emotions and beliefs is a direct product of organic evolution; an attribute preserved and encouraged, because it is useful to the race, and transmitted from parents to offspring by physiological inheritance.' On this theory loyalty in some shape or other is as natural to man as maternal affection is natural to mammals. Doubtless it is more

variable in strength, more flexible in direction, more easily smothered by competing egoisms; but the capacity for it is not less innate, and not less necessary in the struggle for existence. But when we ask how far selection has been responsible for the development of high altruistic ideals out of primitive forms of loyalty, we touch on problems of much greater complexity. Evidently there has been a profound moral transformation in the course of ages. None suppose that ethical values are appraised in the twentieth century as they were in the first stone age. But what has caused the change is not so clear.

There are obvious, and, I think, insurmountable difficulties in attributing it to organic selection. Selection is of the fittest—of the fittest to survive. But in what consists this particular kind of fitness? The answer from the biological point of view is quite simple: almost a matter of definition. That race is "fit" which maintains its numbers; and that race is fittest which most increases them. The judge of such "fitness" is not the moralist or the statesman. It is the Registrar-General. So little is "fitness" inseparably attached to excellence, that it would be rash to say that there is any quality,

however unattractive, which might not in conceivable circumstances assist survival. High authorities, I believe, hold that at this moment in Britain we have so managed matters that congenital idiots increase faster than any other class of the population. If so, they must be deemed the "fittest" of our countrymen. No doubt this fact, if it be a fact, is an accident of our social system. Legislation has produced this happy adaptation of environment to organism, and legislation might destroy it. The fittest to-day might become the unfittest to-morrow. But this is nothing to the purpose. That part of man's environment which is due to man does no doubt usually vary more quickly than the part which is due to nature; none the less is it environment in the strictest sense of the word. The theory of selection draws no essential distinction between (say) the secular congelation of a continent in the ice age, and the workings of the English Poor Law in the twentieth century. It is enough that each, while it lasts, favours or discourages particular heritable variations, and modifies the qualities that make for "survival."

What is more important, however, than the fact that heritable "fitness" may be com-

pletely divorced from mental and moral excellence, is the fact that so large a part of man's mental and moral characteristics are not heritable at all, and cannot therefore be directly due to organic selection. Races may accumulate accomplishments, yet remain organically unchanged. They may learn and they may forget, they may rise from barbarism to culture, and sink back from culture to barbarism, while through all these revolutions the raw material of their humanity varies never a bit. In such cases there can be no question of Natural Selection in the sense in which biologists use the term.

And there are other considerations which suggest that, as development proceeds, the forces of organic selection diminish. While man was in the making we may easily believe that those possessing no congenital instinct for loyalty failed, and that failure involved elimination. In such circumstances, the hereditary instinct would become an inbred characteristic of the race. But in a civilised, or even in a semi-civilised, world, the success of one competitor has rarely involved the extinction of the other—at least by mere slaughter. When extinction has followed defeat, it has been due rather to the gradual

effects of disease and hardship, or to other causes more obscure, but not less deadly. The endless struggles between tribes, cities, nations, and races, have in the main been struggles for domination, not for existence. Slavery, not death, has been the penalty of failure; and if domination has produced a change in the inherited type, it is not because the conquered has perished before the conqueror, but because, conquest having brought them together, the two have intermarried. There is thus no close or necessary connection between biological "fitness" and military or political success. The beaten race, whose institutions or culture perish, may be the race which in fact survives; while victors who firmly establish their language, religion, and polity may, after a few centuries, leave scarce a trace behind them of any heritable characteristics which the anthropologist is able to detect.

This observation, however, suggests a new point. Is there not, you may ask, a "struggle for existence" between non-heritable acquirements which faintly resembles the biological struggle between individuals or species? Religious systems, political organisations, speculative creeds, industrial inventions, na-

tional policies, scientific generalisations, and (what specially concerns us now) ethical ideals, are in perpetual competition and conflict. Some maintain themselves or expand. These are, by definition, the "fit." Some wane or perish. These are, by definition, the unfit. Here we find selection, survival, elimination; and, though we see them at work in quite other regions of reality than those explored by the student of organic evolution, the analogy between the two cases is obvious.

But is the analogy more than superficial? Is it relevant to our present argument? Can it explain either the spread of higher moral ideals or their development? Let us consider for a moment some examples of this psychological "struggle for existence." Take, as a simple case, the competition between rival inventions—between the spinning-jenny and the hand-loom, the breech-loader and the muzzle-loader, pre-Listerian and post-Listerian methods of surgery. Unless the environment be strongly charged with prejudice, ignorance, or sinister interests, the "fittest" in such cases is that which best serves its purpose. Measurable efficiency is the quality which wins. But this supplies us with no useful analogy when we are dealing with ethics.

Morality, as I have already insisted, is not an invention designed to serve an external purpose. The "struggle for existence" between higher and lower ethical ideals has no resemblance to the struggle between the spinning-jenny and the hand-loom. It is a struggle between ends, not between means. Efficiency is not in question.

A like observation applies to that quality of our beliefs which might be described as "argumentative plausibility." This is to abstract theorising what efficiency is to practical invention. It has survival value. Both, of course, are relative terms, whose application varies with circumstances. An invention is only efficient while the commodity it produces is in demand. A theory is only plausible while it hits off the intellectual temper of the day. But if efficiency and plausibility be thus understood, the more efficient invention and the more plausible doctrine will oust their less favoured rivals. They are the "fittest." But as morality is not a means, so neither is it a conclusion. Whatever be its relation to Reason, *reasoning* can never determine the essential nature of its contents. Plausibility, therefore, is no more in question than efficiency.

I do not, of course, deny that ethics are always under discussion, or that the basis of moral rules and their application are themes of unending controversy. This is plainly true. But it is also true that there is no argumentative method of shaking any man's allegiance to an end which he deems intrinsically worthy, except by showing it to be inconsistent with some other end which *he* (not you) deems more worthy still. Dialectic can bring into clear consciousness the implicit beliefs which underlie action, but it cannot either prove them or refute them. It is as untrue to say that there is no disputing about morals as to say that there is no disputing about tastes. But also it is as true; and the truth, properly understood, is fundamental.

What pass for opposing arguments are really rival appeals; and it is interesting to observe that the appeal which, to the unreflecting, seems the most rational is the appeal to selfishness. I am told [1] that on any fine Sunday afternoon in some of our big towns you may find an orator asking why any man should love his country. "What," he inquires, "does a man get by it? Will national success bring either to himself or to

[1] Written in 1913.

any of his hearers more food, more drink, more amusements? If not, why make personal sacrifices for what will never confer personal advantage?" To this particular question it might be replied (though not always with truth) that the antithesis is a false one, and that on the whole the selfish ideal and the patriotic ideal are both promoted by the same policy of public service. But there is another question of the same type to which no such answer is possible. We have all heard it, either in jest or in earnest. "Why" (it is asked) "should we do anything for posterity, seeing that posterity will do nothing for us?" The implication is infamous, but the statement is true. We cannot extract from posterity an equivalent for the sacrifices we make on its behalf. These are debts that will never be recovered. The unborn cannot be sued; the dead cannot be repaid. But what then? Altruism is not based on egoism; it is not egoism in disguise. The ends to which it points are ends in themselves; and their value is quite independent of argument, neither capable of proof nor requiring it.

In what, then, consists the psychological (as distinguished from the organic) "fitness" of the higher moral ideals? If it cannot be

found in their practical efficiency, nor yet in their argumentative plausibility, where shall we seek it ?

Sometimes, no doubt, the explanation is to be found in their association with a culture, other elements of which do possess both these kinds of "fitness." Thus Western morality —or (to be accurate) Western notions of morality—find favour with backward races, because they are associated with Western armaments and Western arts. Again, they may be diffused, perhaps as part of some militant religion, by the power of the sword or by its prestige. They reach new regions in the train of a conqueror, and willingly or unwillingly the conquered accept them.

But these associations are seemingly quite casual. The prestige of Western arts and science may assist the diffusion of Western morals, as it assists the diffusion of Western languages, or Western clothes. Conquests by Mahommedan or Christian States may substitute a higher for a lower ethical creed in this or that region of the world. Such cases, however, leave us still in the realm of accident. The causes thus assigned for the spread of a particular type of ethical ideal have nothing to do with the quality of that type. They

would promote bad morals not less effectively than good; as a hose will, with equal ease, scatter dirty water or clean. Moreover, the growth of the higher type in its place of origin is left wholly unexplained. Its "fitness" seems a mere matter of luck due neither to design nor to any natural imitation of design.

The rigour of this conclusion would be little mitigated even if we could connect psychological fitness with some quite non-moral peculiarity habitually associated with the higher morality, but not with the lower. If, for example, the former were found to lead normally to worldly success, its repute would need no further explanation. If, in private life, those endowed with Sir Charles Grandison's merits usually possessed Sir Charles Grandison's estate, if, in political or national life, victory and virtue went ever hand in hand, morality might be none the better, but certainly it would be more the fashion. Heaven would be wearied with prayers for an unselfish spirit, uttered by suppliants from purely selfish motives. Saints would become the darlings of society, and the book of Job would be still unwritten.[1]

[1] Doubtless under such circumstances ideal virtue might also have survival value in the biological sense.

I can devise no more extravagant hypothesis. But though, if it were true, the "fitness" of the higher morality might seem to have found an explanation, it is not the explanation we require. It is too external. It gives no account of the appeal which the nobler ends of action make to our judgments of intrinsic value. It suggests the way in which a higher ideal might increase the number of its possessors at the expense of a lower, but not the way in which the higher ideal might itself arise. Indeed, we must go further. Few are the moralists who would maintain that indifference to worldly triumphs was not, on the whole, a bar to their attainment. Few are the biologists who would maintain that care and kindness, lavished on the biologically unfit, will never tend to diminish the relative number of the biologically fit. But, if so, we must agree with Nietzsche in thinking that ethical values have become "denaturalised." In their primitive forms the products of selection, they have, by a kind of internal momentum, overpassed their primitive purpose. Made by nature for a natural object, they have developed along lines which are certainly independent of selection, perhaps in opposition to it. And though not as remote from their

first manifestations as is the æsthetic of men from the æsthetic of monkeys, no evolutionary explanation will bridge the interval. If we treat the Sermon on the Mount as a naturalistic product, it is as much an evolutionary accident as *Hamlet* or the Ninth Symphony.

IV

In what setting, then, are we to place morality so that these "denaturalised" values may be retained? Can we be content to regard the highest loyalties, the most devoted love, the most limitless self-abnegation as the useless excesses of a world-system, which in its efforts to adapt organism to environment has overshot its mark?

I deem it impossible. The naturalistic setting must be expanded into one which shall give the higher ethics an origin congruous with their character. Selection must be treated as an instrument of purpose, not simply as its mimic. Theistic teleology must be substituted for Naturalism. Thus, and thus only, can moral values, as it seems to me, be successfully maintained.

This would not, I suppose, have been denied by Nietzsche and Nietzsche's predecessors in

revolt. On the contrary, they would admit the interdependence of morals and religion, as these are commonly understood in Christendom, and they would condemn both. It would, however, have been vehemently denied by agnostics like Huxley; for Huxley accepted, broadly speaking, Christian ethics, while refusing to accept the Christian, or, indeed, any other form of theology.

In my opinion, this position is not permanently tenable. I do not mean that it involves a logical contradiction. I do mean that it involves an emotional and doctrinal incompatibility of a very fundamental kind. And this is a defect which may be even more fatal than logical contradiction to the stability of ethical beliefs.

For what was Huxley's position? His condemnation of evolutionary ethics was far more violent than my own. He states categorically that "What is ethically best involves conduct which in all respects is opposed to that which leads to success in the cosmic struggle for existence." On a biological question I differ from him with misgiving; but, as I have already urged, selection may plausibly be credited with the earlier stages of the noblest virtues. I cannot think that the mother who

sacrifices herself for her child, the clansman who dies for his chief, the generation which suffers for the sake of its posterity, are indulging in "conduct which is in all respects opposed to that which leads to success in the cosmic struggle for existence." But, whether Huxley be right on this point or I, it is surely impossible for the mass of mankind to maintain, at the cost of much personal loss, an ideal of conduct which science tells us is not merely an evolutionary accident, but an evolutionary mistake; something which was, and is, contrary to the whole trend of the cosmic process which brought us into being, and made us what we are. It requires but a small knowledge of history to show how easily mankind idealises nature; witness such phrases as "the return to nature," the "state of nature," "natural rights," "natural law," and so forth. Appeals founded upon these notions have proved powerful, even when they ran counter to individualistic selfishness. When the two are in alliance, how can they be resisted? Is it possible for the ordinary man to maintain undimmed his altruistic ideals if he thinks Nature is against them?—unless, indeed he also believes that God is on their side?

V

Here are questions raised to which there is no parallel in the case of æsthetics. Doubtless differences of æsthetic judgment abound; but they do not produce difficulties quite matching those due to the collision of incompatible ends; nor is their solution so important. On this subject I must say a few words before bringing this lecture to a conclusion.

Possible collisions between ends are many, for ends themselves are many. And of these ends some are in their very nature irreconcilable;—based on essential differences which reflection only makes more apparent, and moral growth more profound.

Now these collisions are not always between altruism and egoism. Often they are between different forms of altruism—call them, if you please, the positive form and the negative. Enmity, hate, cruelty, tyranny, and all that odious brood whose end and object is the pain and abasement of others are not intrinsically egoistic. Though they be the vilest of all passions, yet they do not necessarily involve any taint of selfish alloy. Often as disinterested as the most devoted love or the most single-minded

loyalty, they may demand no smaller sacrifices on the part of those whom they inspire, and the demand may be not less willingly obeyed. It is, perhaps, worth observing that these altruistic ends, the positive and the negative, the benevolent and the malevolent, irreconcilably opposed as they are in moral theory, have often been associated in ethical practice. Family affection has in many half-civilised communities produced the binding custom of family vendetta. Political loyalty, which has blossomed into some of the noblest forms of positive altruism, has also bred cruelty and hatred against those who are outside the pale of the tribe, the state, the party, or the creed. The brightest light has cast the deepest shadows. To torture and enslave, not because it brings profit to the victor, but because it brings pain to the vanquished, has, through long ages, been deemed a fitting sequel to victories born of the most heroic courage and the noblest self-sacrifice; while no small part of moral progress has consisted in expelling this perverted altruism from the accepted ideals of civilised mankind.

Egoism is far more reputable. The agent's own good, considered in itself, is, what negative altruism can never be, a perfectly legitimate

object of endeavour. When, therefore, there is a collision between egoism and positive altruism, problems of real difficulty may arise; the competing ends may both have value, and the need for a reconciliation, practical as well as speculative, of necessity impresses both moralists and legislators.

In practice the evils of this conflict arise largely from the fact that the end which has most worth has too often least power. This is not surprising if the account of ethical evolution, which I have provisionally adopted in this lecture, be near the truth. For the extra-regarding instincts are of later birth than the self-regarding. All animals look after themselves. Only the more developed look also after others. The germ of what, in reflection, becomes egoism is of far earlier growth than the germ of what, in reflection, becomes altruism. Being more primitive, it is more deeply rooted in our nature; and, even when recognised as morally lower, it tends, when there is conflict, to prevail over its rival. "The evil that I would not, that I do."

Now this result has, as we all know, serious social consequences. Even the least stable society must be organised on some firm frame-

work of custom, rule, and law; and these, in their turn, must find their main support in the willing loyalty of the general community. But, though loyalty is the great essential, it is not sufficient. Legislators, lawyers, moralists, all agree that in the collision between ends—especially between egoistic and altruistic ends—it is not always the highest end as judged by the agent himself, still less the highest end as measured by the standards of the community, which finally prevails. Therefore must law and custom have the support of sanctions: sanctions being nothing else than devices for bringing a lower motive to the aid of a higher, and so producing better conduct, if not[1] better morals. Public approval and disapproval, the jailer and the hangman, heaven and hell, are familiar examples. Can they in any true sense effect a reconciliation between discordant ends, and, in particular, between altruism and egoism? I hardly think so. When they are effective they doubtless dimin-

[1] Indirectly, no doubt, sanctions may perform a most important educational work in stimulating and guiding the higher loyalties. The approval or disapproval of our fellows, the "terrors of the law," the belief in future rewards and punishments, though their immediate appeal is only to self-interest, may powerfully aid in the creation of moral judgments sufficiently free from any "empirical elements of desire" to have satisfied Kant himself.

ish ethical conflict; but it is by ignoring the intrinsic value of one set of ethical ends. In so far as we are honest because honesty is the best policy, in so far as we do not injure lest we should ourselves be injured, in so far as we benefit that we may be benefited ourselves—just in that proportion we treat altruistic actions merely as the means of attaining egoistic ends. The two competitors are not reconciled, but a working arrangement is reached under which the conduct appropriate to the higher ideal is pursued from motives characteristic of the lower.

Is any truer reconciliation possible? Scarcely, as I think, without religion. I do not suggest that *any* religious theory gets rid of ethical anomalies, or theoretically lightens by a feather-weight the heavy problem of evil. But I do suggest that in the love of God by the individual soul, the collision of ends *for that soul* loses all its harshness, and harmony is produced by raising, not lowering, the ethical ideal.

Kant, by a famous feat of speculative audacity, sought to extract a proof of God's existence from the moral law. In his view the moral law requires us to hold that those who are good will also in the end be happy;

and, since without God this expectation cannot be fulfilled, the being of God becomes a postulate of morality. Is this (you may ask), or any variant of this, the argument suggested in the last paragraph? It is not. In Kant's argument, as I understand it, God was external to morality in the sense that He was not Himself a moral end. It was not our feeling of love and loyalty to Him that was of moment, but His guidance of the world in the interests of virtue and the virtuous. My point is different. I find in the love of God a moral end which reconciles other moral ends, because it includes them. It is not intolerant of desires for our own good. It demands their due subordination, not their complete suppression. It implies loyal service to One who by His essential nature wills the good of all. It requires, therefore, that the good of all shall be an object of our endeavour; and it promises that, in striving for this inclusive end, we shall, in Pauline phrase, be fellow-workers with Him.

I will not further pursue this theme. Its development is plainly inappropriate to these lectures, which are not directly concerned with personal religion. In any case, this portion of my argument, though important, is subsidiary. My main contention rests, not upon

the difficulty of harmonising moral ends in a Godless universe, but upon the difficulty of maintaining moral values if moral origins are purely naturalistic. That they never have been so maintained on any large scale is a matter of historic fact. At no time has the mass of mankind treated morals and religion as mutually independent. They have left this to the enlightened; and the enlightened have (as I think) been wrong.

They have been wrong through their omission to face the full results of their own theories. If the most we can say for morality on the causal side is that it is the product of non-moral, and ultimately of material agents, guided up to a certain point by selection, and thereafter left the sport of chance, a sense of humour, if nothing else, should prevent us wasting fine language on the splendour of the moral law and the reverential obedience owed it by mankind. That debt will not long be paid if morality comes to be generally regarded as the causal effect of petty causes; comparable in its lowest manifestations with the appetites and terrors which rule, for their good, the animal creation; in its highest phases no more than a personal accomplishment, to be acquired or neglected at the bidding

of individual caprice. More than this is needful if the noblest ideals are not to lose all power of appeal. Ethics must have its roots in the divine; and in the divine it must find its consummation.

PART III

INTELLECTUAL VALUES

LECTURE V

INTRODUCTION TO PART III

I

In the preceding lectures I have given reasons for thinking that in two great departments of human interest—Æsthetics and Ethics—the highest beliefs and emotions cannot claim to have any survival value. They must be treated as by-products of the evolutionary process; and are, therefore, on the naturalistic hypothesis, doubly accidental. They are accidental in the larger sense of being the product of the undesigned collocation and interplay of material entities—molecular atoms, sub-atoms, and ether—which preceded, and will presumably outlast, that fraction of time during which organic life will have appeared, developed, and perished. They are also accidental in the narrower sense of being only accidentally associated with that process of selective elimination, which, if Darwinism be true, has so happily imitated contrivance in the adaptation

of organisms to their environment. They are the accidents of an accident.

I disagreed with this conclusion, but I did not attempt to refute it. I contented myself with pointing out that it was destructive of values; and that, the greater the values, the more destructive it became. The difficulty, indeed, on which I have so far insisted is not a logical one. We have not been concerned with premises and conclusions. Neither our æsthetic emotions nor our moral sentiments are the product of ratiocination; nor is it by ratiocination that they are likely to suffer essential wrong. If you would damage them beyond repair, yoke them to a theory of the universe which robs them of all general significance. Then, at the very moment when they aspire to transcendent authority, their own history will rise up in judgment against them, impugning their pretensions, and testifying to their imposture.

II

The inquiry on which I now propose to enter will follow a more or less parallel course, and will reach a more or less similar conclusion. Yet some characteristic differences it

must necessarily exhibit. In the higher regions of æsthetics and ethics, emotions and beliefs are inextricably intertwined. They are what naturalists describe as "symbiotic." Though essentially different, they are mutually dependent. If one be destroyed, the other withers away.

But Knowledge—the department of human interest to which I now turn—is differently placed. The values with which we shall be concerned are mainly rational; and intellectual curiosity is the only emotion with which they are associated. Yet here also two questions arise corresponding to those which we have already dealt with in a different connection: (1) what are the causes of our knowledge, or of that part of our knowledge which concerns the world of common sense and of science? (2) does the naturalistic account of these causes affect the rational value—in other words the validity—of their results?

We are, perhaps, more sensitive about the pedigree of our intellectual creed than we are about the pedigree of our tastes or our sentiments. We like to think that beliefs which claim to be rational are the product of a purely rational process; and though, where others are concerned, we complacently admit the

intrusion of non-rational links in the causal chain, we have higher ambitions for ourselves.

Yet surely, on the naturalistic theory of the world, all such ambitions are vain. It is abundantly evident that, however important be the part which reason plays among the immediate antecedents of our beliefs, there are no beliefs which do not trace back their origin to causes which are wholly irrational. Proximately, these beliefs may take rank as logical conclusions. Ultimately, they are without exception rooted in matter and motion. The rational order is but a graft upon the causal order; and, if Naturalism be true, the causal order is blind.

III

Before I further develop this line of speculation it may help you to understand what I am driving at if I venture upon an autobiographical parenthesis. The point I have just endeavoured to make I have made before in these lectures, and I have made it elsewhere. It is one of a number of considerations which have led me to question the prevalent account of the theoretical ground-work of our accepted beliefs. Taken by itself, its tendency is sceptical;

and, since it has been associated with arguments in favour of a spiritual view of the universe, I have been charged (and not always by unfriendly commentators) with the desire to force doubt into the service of orthodoxy by recommending mankind to believe what they wish, since all beliefs alike are destitute of proof. As we cannot extricate ourselves from the labyrinth of illusion, let us at least see to it that our illusions are agreeable.

This, however, is not what I have ever wanted to say, nor is it what I want to say now. If I have given just occasion for such a travesty of my opinions, it must have been an indirect consequence of my early, and no doubt emphatically expressed, contempt for the complacent dogmatism of the empirical philosophy, which in Great Britain reigned supreme through the third quarter of the nineteenth century. But was this contempt altogether unreasonable ?

I went to Cambridge in the middle sixties with a very small equipment of either philosophy or science, but a very keen desire to discover *what* I ought to think of the world, and *why*. For the history of speculation I cared not a jot. Dead systems seemed to me of no more interest than abandoned fashions.

My business was with the ground-work of living beliefs; in particular, with the ground-work of that scientific knowledge whose recent developments had so profoundly moved mankind. And surely there was nothing perverse in asking modern philosophers to provide us with a theory of modern science!

I was referred to Mill; and the shock of disillusionment remains with me to the present hour. Mill possessed at that time an authority in the English Universities, and, for anything I know to the contrary, in the Scotch Universities also, comparable to that wielded forty years earlier by Hegel in Germany and in the Middle Ages by Aristotle. Precisely the kind of questions which I wished to put, his Logic was deemed qualified to answer. He was supposed to have done for scientific inference what Bacon tried to do, and failed. He had provided science with a philosophy.

I could have forgiven the claims then made for him by his admirers; I could have forgiven, though young and intolerant, what seemed to me the futility of his philosophic system, if he had ever displayed any serious misgiving as to the scope and validity of his empirical methods. If he had admitted, for example, that, when all had been done that

could be done to systematise our ordinary modes of experimental inference, the underlying problem of knowledge still remained unsolved. But he seemed to hold, in common with the whole empirical school of which, in English-speaking countries, he was the head, that the fundamental difficulties of knowledge do not begin till the frontier is crossed which divides physics from metaphysics, the natural from the supernatural, the world of "phenomena" from the world of "noumena," "positive" experiences from religious dreams. It may be urged that, if these be errors, they are errors shared by ninety-nine out of every hundred persons educated in the atmosphere of Western civilisation, whatever be their theological views: and I admit that it has sunk deep into our ordinary habits of thought. Apologetics are saturated with it, not less than agnosticism or infidelity. But, for my own part, I feel now, as I felt in the early days of which I am speaking, that the problem of knowledge cannot properly be sundered in this fashion. Its difficulties begin with the convictions of common sense, not with remote, or subtle, or otherworldly speculations; and if we could solve the problem in respect of the beliefs which, roughly speaking, everybody shares, we might

see our way more clearly in respect of the beliefs on which many people are profoundly divided.

That Mill's reasoning should have satisfied himself and his immediate disciples is strange. But that the wider public of thinking men, whom he so powerfully influenced, should on the strength of this flimsy philosophy adopt an attitude of dogmatic assurance both as to what can be known and what cannot, is surely stranger still. Thus, at least, I thought nearly half a century ago, and thus I think still.

Consider, for example, a typical form of the ordinary agnostic position: that presented by Leslie Stephen. The best work of this excellent writer was biographical and literary; but he was always deeply interested in speculation; and his own creed seems early to have taken its final shape under the philosophical influences of the British empiricists. He regarded the "appeal to experience" as the fundamental dogma of agnosticism, and by the "appeal to experience" he meant what Mill meant by it. He sincerely supposed that this gave you indisputable knowledge of "phenomena," and that if you went beyond "phenomena" you were dreaming, or you were inventing.

This is a possible creed; and it is, in fact,

the creed held implicitly, or explicitly, by many thousands of quite sensible people. But why should those who hold it suppose that it must always satisfy impartial inquirers? Why should they assume that those who reject it are sacrificing their reason to their prejudices or their fancies? It may represent the best we can do, but is it, after all, so obviously reasonable? On this subject the empirical agnostic has no doubts. He holds, with unshaken confidence, that nothing deserves to be believed but that which in the last resort is proved by "experience"; that the strength of our beliefs should be exactly proportioned to the evidence which "experience" can supply, and that every one knows or can discover exactly what this evidence amounts to. Leslie Stephen refers to a well-known aphorism of Locke, who declared that "there is one unerring mark by which a man may know whether he is a lover of truth in earnest, viz. the not entertaining any proposition with greater assurance than the proofs it is built on will warrant." Upon which Leslie Stephen observes that the sentiment is a platitude, but, in view of the weakness of human nature, a useful platitude.

Is it a platitude? Did Locke act up to it? Did Hume act up to it, or any other of Leslie

Stephen's philosophic progenitors? Does anybody act up to it? Does anybody sincerely try to act up to it?

Read through the relevant chapters in Locke's Essay, and observe his ineffectual struggles, self-imprisoned in the circle of his own sensations and ideas, to reach the external world in which he believed with a far "greater assurance" than was warranted by any proofs which *he*, at all events, was able to supply. Read Hume's criticism of our grounds for believing in a real world without, or a real self within, and compare it with his admission that scepticism on these subjects is a practical impossibility.

But we need not go beyond the first chapter of "An Agnostic's Apology" to find an illustration of my argument. Leslie Stephen there absolves himself from giving heed to the conclusions of philosophers, because there are none on which all philosophers are agreed, none on which there is even a clear preponderance of opinion. On the other hand, he is ready to agree with astronomers, because astronomers, "from Galileo to Adams and Leverrier," substantially agree with each other. Agreement among experts is, in his opinion, a guarantee of truth, and disagreement a proof of error.

But then he forgets that these distressing differences among philosophers do not touch merely such entities as God and the soul, or the other subjects with which agnostics conceive man's faculties are incapable of dealing. They are concerned (among other things) with the presuppositions on which our knowledge of "phenomena"—including, of course "astronomy from Galileo to Adams and Leverrier," is entirely constructed. What, in these circumstances, is Locke's "sincere lover of truth" to do? How is he to avoid "entertaining propositions with greater assurance than the proofs they are built on will warrant"? Where will he find a refuge from the "pure scepticism" which is, in Leslie Stephen's opinion, the natural result of divided opinions? How is he to get on while he is making up his mind whether any theory of the world within his reach will satisfy unbiased reason?

The fact is that the adherents of this philosophic school apply, quite unconsciously, very different canons of intellectual probity to themselves and to their opponents. "Why," asks Mr. Stephen, "should a lad who has just run the gauntlet of examination and escaped to a country parsonage be dogmatic?" If to be dogmatic is to hold opinions with a conviction

in excess of any reason that can be assigned for them, there seems to be no escape for the poor fellow. The common lot of man is not going to be reversed for him. Though he abandon his parsonage and renounce his Church, though he scrupulously purify his creed from every taint of the "metempirical," though he rigidly confine himself to themes which his critics declare to be within the range of his intellectual vision, fate will pursue him still. He may argue much or argue little; he may believe much or believe little; but, however much he argues and however little he believes, his beliefs will always transcend his arguments, and to faith, in his own despite, he must still appeal.

Those who accept Leslie Stephen's philosophy suppose that for this young man, as for all others, a way of escape may be found by appealing to experience. But surely none are so sanguine as to suppose that, by appealing to experience, they are going to avoid what Mr. Stephen describes as "endless and hopeless controversies." Alas, this is not so! The field of experience is no well-defined and protected region under whose clear skies useful knowledge flourishes unchallenged, while the mist-enshrouded territories of its metaphysical

neighbours are devastated by unending disputations. On the contrary, it is the very battlefield of philosophy, the cockpit of metaphysics, strewn with abandoned arguments, where every strategic position has been taken and retaken, to which every school lays formal claim, which every contending system pretends to hold in effective occupation. Indeed, by a singular irony, the thinkers who, at this particular moment, talk most about experience are those metaphysicians of the Absolute in whose speculations Mr. Stephen saw no beginning of interest, except that of being (as he supposed) at once the refuge and the ruin of traditional religion. But these philosophers have no monopoly. All men nowadays speak well of experience. They begin to differ only when they attempt to say what experience is, to define its character, explain its credentials, and expound its message. But, unhappily, when this stage is reached their differences are endless.

IV

I am, of course, not concerned with Mr. Stephen except as a brilliant representative of a mode of thought to which I most vehe-

mently object. I do not object to it merely because it is in my judgment insufficient and erroneous, still less because I dislike its conclusion. I object to it because it talks loudly of experience, yet never faces facts; and boasts its rationality, yet rarely reasons home. These are far graver crimes against the spirit of truth than any condemned in Locke's pretentious aphorism, and they lead to far more serious consequences.

If you ask me what I have in mind when I say that agnostic empiricism never faces facts, I reply that it never really takes account of that natural history of knowledge, of that complex of causes, rational and non-rational, which have brought our accepted stock of beliefs into being. And if you ask me what I have in mind when I say that though it reasons, it rarely reasons home, I reply that, when it is resolved not to part with a conclusion, anything will serve it for an argument; only when it is incredulous does it know how to be critical.

This is not an error into which I propose to fall. But I hope that I shall not on that account be deemed indifferent to the claims of reason, or inclined to treat lightly our beliefs either about the material world or the imma-

terial. On the contrary, my object, and my only object, is to bring reason and belief into the closest harmony that at present seems practicable. And if you thereupon reply that such a statement is by itself enough to prove that I am no ardent lover of reason; if you tell me that it implies, if not permanent contentment, at least temporary acquiescence in a creed imperfectly rationalised, I altogether deny the charge. So far as I am concerned, there is no acquiescence. Let him that thinks otherwise show me a better way. Let him produce a body of beliefs which shall be at once living, logical, and sufficient;—not forgetting that it cannot be sufficient unless it includes within the circuit of its doctrines some account of itself regarded as a product of natural causes, nor logical unless it provides a rational explanation of the good fortune which has made causes which are not reasons, mixed, it may be, with causes which are not *good* reasons, issue in what is, by hypothesis, a perfectly rational system. He who is fortunate enough to achieve all this may trample as he likes upon less successful inquirers. But I doubt whether, when this discoverer appears, he will be found to have reached his goal by the beaten road of empirical agnos-

ticism. This, though it be fashionably frequented, is but a blind alley after all.

In the meanwhile we must, I fear, suffer under a system of beliefs which is far short of rational perfection. But we need not acquiesce, and we should not be contented. Whether this state of affairs will ever be cured by the sudden flash of some great philosophic discovery is another matter. My present aim, at all events, is far more modest. But they, at least, should make no complaint who hold that common-sense beliefs, and science which is a development of common-sense beliefs, are, if not true, at least on the way to truth. For this conviction I share. I profess it; I desire to act upon it. And surely I cannot act upon it better than by endeavouring, so far as I can, to place it in the setting which shall most effectually preserve its intellectual value. This, at all events, is the object to which the four lectures that immediately follow are designed to contribute.

LECTURE VI

PERCEPTION, COMMON SENSE, AND SCIENCE

I

NOTHING would seem easier, at first sight, than to give a general description of the ordinary beliefs of ordinary people about our familiar world of things and persons. It is the world in which we live; it is for all men *a* real world; it is for many men *the* real world; it is the world of common sense, the world where the plain man feels at home, and where the practical man seeks refuge from the vain subtleties of metaphysics. Our stock of beliefs about it may perhaps be difficult to justify, but it seems strange that they should be difficult to describe; yet difficult, I think, they are.

Some statements about it may, however, be made with confidence. It is in space and time; i.e. the material things of which it is composed, including living bodies, are extended,

have mutual position, and possess at least some measure of duration.

Things are not changed by a mere change of place, but a change of place relative to an observer always changes their appearance *for him*. Common sense is, therefore, compelled in this, as in countless other cases, to distinguish the appearance of a thing from its reality; and to hold, as an essential article of its working creed, that appearances may alter, leaving realities unchanged.

Common sense does not, however, draw the inference that our experiences of material things is other than direct and immediate. It has never held the opinion—or, if you will, the heresy—that what we perceive (at least by sight and touch) are states of our own mind, which somehow copy or represent external things. Neither has it ever held that the character or duration of external things in any way depends upon our observations of them. In perception there is no reaction by the perceiving mind on the object perceived. Things in their true reality are not affected by mere observation, still less are they constituted by it. When material objects are in question, common sense never supposes that *esse* and *percipi* are identical.

But then, what, according to common sense,

are things in their true reality? What are they "in themselves," when no one is looking at them, or when only some of their aspects are under observation?

We can, at all events, say what (according to common sense) things are *not*. They are more than collections of aspects. If we could simultaneously perceive a "thing" at a thousand different distances, at a thousand different angles, under a thousand varieties of illumination, with its interior ideally exposed in a thousand different sections, common sense, if pressed, would, I suppose, still hold that these were no more than specimens of the endless variety of ways in which things may appear, without either changing their nature or fully revealing what that nature is. But though common sense might give this answer, it would certainly resent the question being put. It finds no difficulty in carrying on its work without starting these disturbing inquiries. It is content to say that, though a thing is doubtless always more than the sum of those aspects of it to which we happen to be attending, yet our knowledge *that* it is and *what* it is, however imperfect, is, for practical purposes, sufficiently clear and trustworthy, requiring the support neither of metaphysics

nor psychology.—This, with all its difficulties, is, I believe, an account, true as far as it goes, of the world of things as common sense conceives it. This is the sort of world which science sets out to explain. Let me give an illustration.

We perceive some object—let us say the sun. We perceive it directly and not symbolically. What we see is not a mental image of the sun, nor a complex of sensations caused by the sun; but the sun itself. Moreover, this material external object retains its identity while it varies in appearance. It is red in the morning; it is white at midday; it is red once more in the evening; it may be obscured by clouds or hidden in eclipse; it vanishes and reappears once in every twenty-four hours; yet, amid all these changes and vanishings, its identity is unquestioned. Though we perceive it differently at different times, and though there are times when we do not perceive it at all, we know it to be the same; nor do we for a moment believe (with Heraclitus) that when it is lost to view it has, on that account, either altered its character or ceased to exist.

In the main, therefore, experience is, according to common sense, a very simple affair. We

see something, or we feel something, or, like Dr. Johnson, we kick something, and "there's an end on't." Experience is the source of all knowledge, and therefore of all explanation; but, in itself, it seems scarcely to require to be explained. Common sense is prepared to leave it where it finds it. No doubt the occurrence of optical or other illusions may disturb this mood of intellectual tranquillity. Common sense, when it has to consider the case of appearances, some of which are held, on extraneous grounds, to be real and others to be illusory, may feel that there are, after all, problems raised by perception—by the direct experience of things—which are not without their difficulties. But the case of illusions is exceptional, and rarely disturbs the even tenor of our daily round.

II

Now science, as it gladly acknowledges, is but an extension of common sense. It accepts, among other matters, the common-sense view of perception. Like common sense, it distinguishes the thing as it is from the thing as it appears. Like common sense, it regards the things which are experienced as being them-

selves unaffected by experience. But, unlike common sense, it devotes great attention to the way in which experience is produced by things. Its business is with the causal series. This, to be sure, is a subject which common sense does not wholly ignore. It would acknowledge that we perceive a lamp through the light which it sheds, and recognise a trumpet through the sound which it emits; but the nature of light or sound, and the manner in which they produce our experience of bright or sonorous objects, it hands over to science for further investigation.

And the task is cheerfully undertaken. Science also deems perception to be the source of all our knowledge of external nature. But it regards it as something more, and different. For perception is itself a part of nature, a natural process, the product of antecedent causes, the cause of subsequent effects. It requires, therefore, like other natural facts, to be observed and explained; and it is the business of science to explain it.

Thus we are brought face to face with the contrast on which so much of the argument of these lectures turns: the contrast between beliefs considered as members of a cognitive series, and beliefs considered as members of

a causal series. In the cognitive series, beliefs of perception are at the root of our whole knowledge of natural laws. In the causal series, they are the effects of natural laws in actual operation. This is so important an example of this dual state that you must permit me to consider it in some detail.

We may examine what goes on between the perceiving person and the thing he perceives from either end; but it is by no means a matter of indifference with which end we begin. If we examine the relation of the perceiver to the perceived it does not seem convenient or accurate to describe that relation as a process. It is an experience, immediate and intuitive; not indeed infallible, but direct and self-sufficient. If I look at the sun, it is the sun I see, and not an image of the sun, nor a sensation which suggests the sun, or symbolises the sun. Still less do I see ethereal vibrations, or a retinal image, or a nervous reaction, or a cerebral disturbance. For, in the act of perceiving, no intermediate entities are themselves perceived.

But now if we, as it were, turn round, and, beginning at the other end, consider the relation of the perceived to the perceiver, no similar statements can be made. We find ourselves

concerned, not with an act of intuition, but with a physical process, which is complicated, which occupies time, which involves many stages. We have left behind cognition ; we are plunged in causation. Experience is no longer the immediate apprehension of fact ; it is the transmission of a message conveyed from the object to the percipient by relays of material messengers. As to how the transmission is effected explanations vary with the growth of science. They have been entirely altered more than once since the modern era began, and with each alteration they become more complicated. They depend, not on one branch of science only, but on many. Newtonian astronomy, solar physics, the theory of radiation, the optical properties of the atmosphere, the physiology of vision, the psychology of perception, and I daresay many other branches of research, have to be drawn upon : and all this to tell us what it is we see, and how it is we come to see it.

III

Now there is no one who possesses the least smattering of philosophy who does not know that the views I have just endeavoured to

describe are saturated with difficulties: difficulties connected with the nature of perception; difficulties connected with the nature of the object as perceived; difficulties connected with its unperceived physical basis; difficulties connected with the relation in which these three stand to each other. For common sense the material object consists of a certain number of qualities and aspects which are perceived, an inexhaustible number which might be perceived, but are not, and (perhaps) a vaguely conceived "somewhat" lying behind both. The medieval Aristotelian, if I rightly understand him (which very likely I do not), developed this "somewhat" into the notion of substance—an entity somewhat loosely connected with the qualities which it supported, and in no way explaining them. There was "substance" in a piece of gold, and "substance" in a piece of lead; but there was nothing unreasonable in the endeavour to associate the qualities of gold with the substance of lead, and thus for all practical purposes to turn lead into gold.

Modern science teaches a very different lesson. It has, perhaps, not wholly abandoned the notion of material substance, if this be defined as the unperceivable support of perceivable qualities; but it persistently strives

to connect the characteristics of matter with its structure, and, among other characteristics, that of producing, or helping to produce, in us those immediate perceptions which we describe as our experience of matter itself.

An important stage in this endeavour was marked by the famous distinction between the primary and the secondary qualities of matter : the primary qualities being the attributes of external material things which were deemed to be independent of the observer (for example, impenetrability, density, weight, configuration) ; the secondary qualities being those which, apart from observers endowed with senses like our own, would either exist differently, or would not exist at all (for example, colour and taste). On this view the primary qualities were among the causes of the secondary qualities, and the secondary qualities were transferred from the thing perceived to the person perceiving.

I am not the least concerned to defend this theory. It has been much derided, and is certainly open to attack. But something like it seems to be an inevitable stage in the development of modern views of nature. The whole effort of physical science is to discover the material or non-psychical facts which shall,

among other things, account for our psychical experiences. It is true that there are men of science, as well as philosophers, who regard all such constructions as purely arbitrary—mere labour-saving devices which have nothing to do with reality. But though I shall have something to say about these theories in my next course of lectures, for the present I need only observe that they do not represent ordinary scientific opinion, either as it is, or as it has ever been. Science thinks, rightly or wrongly, that she is concerned with a real world, which persists independently of our experience: she has never assented to the doctrine that the object of her patient investigations is no more than a well-contrived invention for enabling us to foretell, and perhaps to modify, the course of our personal feelings.

But then, if science is right, we are committed to a division between the contents of immediate experience and its causes, which showed itself dimly and tentatively in the distinction between the secondary and the primary qualities of matter, but has become deeper and more impassable with every advance in physics and physiology. It was possible to maintain (though, I admit, not very easy) that, while the secondary qualities of matter are due to

the action of the primary qualities on our organs of perception, the primary qualities themselves are, nevertheless, the objects of direct experience. The fact, for example, that colour is no more than a sensation need not preclude us from perceiving the material qualities which, like shape, or motion, or mass, are the external and independent causes to which the sensation is due. I do not say that this view was ever explicitly entertained—nor does it signify. For, if we accept the teaching of science, it can, I suppose, be entertained no more. The physical causes of perception are inferred, but not perceived. The real material world has been driven by the growth of knowledge further and further into the realm of the unseen, and now lies completely hidden from direct experience behind the impenetrable screen of its own effects.

IV

For consider what the causal process of perception really is if we trace it from the observed to the observer—if we follow the main strands in the complex lines of communication through which the object seen reveals itself to the man who sees it.

I revert to my previous example—the sun. We need not consider those of its attributes which are notoriously arrived at by indirect methods—which are not perceived but inferred—its magnitude, for example, or its mass. Confining ourselves to what is directly perceived, its angular size, its shape (projected on a plane), its warmth, its brightness, its colour, its (relative) motion, its separation from the observer in space—how are these immediate experiences produced?

The answers have varied with the progress of science; nor, for my present purpose, does it greatly matter which answers we adopt. Let us take those which are commonly accepted at the present moment. They are not only the truest, but the fullest; and for that very reason they put the difficulty with which we are concerned in the highest relief. We begin our causal series with electrons, or, if you do not accept the electric theory of matter in any of its forms, then with atoms and molecules. We start with these, because the sun is a collection of them, and because it is their movements which set going the whole train of causes and effects by which the sun produces in us the perception of itself.

We may take, as the next stage, ethereal

vibrations, of various lengths and various amplitudes, sent travelling into space by the moving particles. A fraction of these waves reaches our atmosphere, and of that fraction a fraction reaches our eyes, and of that fraction a further fraction falls within the narrow limits of length to which our eyes are sensitive. It is through these that we are able to *see* the sun. Still another fraction, not necessarily identical in wave-lengths, affects the nerves which produce in us the sensation of warmth. It is through these that we are able to *feel* the sun.

But, before we either see or feel, there is much still to be accomplished. The causal series is not nearly completed. Complicated neural processes, as yet only imperfectly understood; complicated cerebral processes —as yet understood still less—both involving physiological changes far more complicated than the electrical "accelerations" or electromagnetic disturbances with which we have hitherto been dealing, bring us to the end of the material sequence of causes and effects, and lay the message from the object perceived on the threshold of the perceiving consciousness. So does a postman slip into your letter-box a message which has been first written,

then carried by hand, then by a mail-cart, then by a train, then by hand again, till it reaches its destination, and nothing further is required except that what has been written should be read and understood.

Thus far the material process of transmission. The psychical process has still to come. Psychology is a science, not less than physiology or physics; and psychology has much to say on the subject of perception. It is true that scientific explorers whose point of departure is introspective; who concern themselves primarily with ideas, conceptions, sensations, and so forth, rarely succeed in fitting their conclusions without a break to those of their colleagues who begin with the "external" causes of perception. The two tunnels, driven from opposite sides of the mountain, do not always meet under its crest. Still, we cannot on that account ignore the teaching of psychology on the genesis of perceptual experience regarded, not as the ground of knowledge, but as a natural product.

I do not mean to attempt a summary of psychology from this point of view, any more than I have attempted a summary of physics or physiology. My argument is really independent, in this case as in the other, of par-

ticular systems. All I ask for is the admission that in perception there are conditions antecedently supplied by the perceiving consciousness which profoundly modify every perceptual experience—and that these conditions (unlike Kant's forms) are natural growths, varying, like other natural growths, from individual to individual. This admission must, I think, be made by every empirical psychologist, to whatever school he happens to belong.

If this statement seems obscure in its general and abstract form, consider a particular application of it. Let us assume, with many psychologists, that Will, in the form of selective attention, lies at the root of our perceptual activities; that we may therefore be said, in a sense, voluntarily to create the objects we perceive; that experience of the present is largely qualified by memories of the past, and that the perceptual mould into which our sensations are run is largely a social product—born of the intercourse between human beings, and, in its turn, rendering that intercourse possible. Is it not clear that, on assumptions like these, consciousness, so far from passively receiving the messages conveyed to it through physical and physiological channels, actively modifies their character?

V

But why, it may be asked, should these considerations involve any difficulty? And, if there be a difficulty, what is its exact character?

In its most general form the difficulty is this. It is claimed by science that its conclusions are based upon experience. The experience spoken of is unquestionably the familiar perception of external things and their movements as understood by common sense; and, however much our powers of perception be increased by telescopes, microscopes, balances, thermometers, electroscopes, and so forth, this common-sense view suffers no alteration. The perceptions of a man of science are, in essence, the perceptions of ordinary men in their ordinary moments, beset with the same difficulties, accepted with the same assurance. Whatever be the proper way of describing scientific results, the experimental data on which they rest are sought and obtained in the spirit of "naïf realism."[1]

On this foundation science proceeds to build up a theory of nature by which the foundation itself is shattered. It saws off the branch on which it is supported. It kicks

down the ladder by which it has climbed. It dissolves the thing perceived into a remote reality which is neither perceived nor perceivable. It turns the world of common sense into an illusion, and on this illusion it calmly rests its case.

But this is not the only logical embarrassment in which we are involved. When science has supplied us with a description of external things as they "really are," and we proceed to ask how the physical reality reveals itself to us in experience, a new difficulty arises, or, if you like, the old difficulty with a new face. For science requires us to admit that experience, from this point of view, is equivalent to perception; and that perception is a remote psychological effect of a long train of causes, physical and physiological, originally set in motion by the external thing, but in no way resembling it. Look carefully at this process from the outside, and ask yourselves why there should be any such correspondence between the first of these causes and the last of these effects, as should enable us to know or infer the one from the other? Why should the long train of unperceivable intermediaries that connect the perceived with the perceiver be trusted to speak the truth?

I just now likened these intermediaries to relays of messengers. But messengers are expected to hand on their message in the form in which they have received it. The messengers change, but not the message. The metaphor, therefore, is far too complimentary to the train of physical causes which reveal the material thing to the perceiving consciousness. The neural changes which are in immediate causal contiguity with that psychical effect which we call " the experience of an external object " have no resemblance whatever either to the thing as it is perceived or to the thing as it really is. Nor have they any resemblance to the proximate cause which sets them going, namely, the ethereal vibrations; nor have these to the accelerated electrons which constitute the incandescent object which we " experience " as the sun. Nor has the sun, as experienced, the slightest resemblance to the sun as it really is.

Hume, in his "Dialogues on Natural Religion," urges the absurdity of arguing from an effect like the universe to a cause like God, since the argument from a particular effect to a particular cause, or from a particular cause to a particular effect, is only legitimate when we have had some previous experience of that

particular class of causal sequence; and nobody, it is plain, has had the opportunity of observing Creation. Whatever be the value of this argument in the case of God and the world, it seems to me conclusive in the case of matter and man. We cannot argue from purely psychical effects, like perceptions and sensations, to external causes, like physiological processes or ethereal vibrations, *unless* we can experience both sets of facts in causal relation. And this, if we accept the conclusions of science, we can never do—partly because the intermediate members of the causal series are unperceivable; partly because, if they were perceivable, perception has been reduced by science to a purely psychical effect—which obviously cannot include its material cause. This last must for ever remain outside the closed circle of sensible experiences.

Here, of course, we find ourselves face to face with a familiar objection to those philosophies of perception which deny that we have any access to external reality, except through ideas which are its copy. But they are in a better case than science. They need not explicitly admit a discrepancy between their premises and their conclusions. They arrive at the subjectivity of perception

by methods of introspection. They interrogate consciousness, and are convinced that every experience can be analysed into sensations and ideas, some of which, no doubt, suggest externality, but none of which are external. If, then, the worst comes to the worst, they can, and often do, lighten their philosophic ship by pitching the whole material universe overboard as a bit of superfluous cargo. But physical science cannot (at least in my opinion) do anything of the kind. Its whole business is with the material universe. Its premises are experiences of external things, not of internal sensation and ideas. And if it has associated its fortunes with a theory of perception which treats experience as a natural effect of the thing experienced; if it has thereby wandered within sight of the perilous problems which haunt the frontier where mind and matter meet, it has not done so in a spirit of reckless adventure, but in the legitimate pursuit of its own affairs.

This does not necessarily make things easier. We are not here concerned with questionings about the remoter provinces of knowledge—provinces unexplored except by specialists, negligible by ordinary men engaged on ordinary business. On the contrary, the difficulties to

which I have called your attention threaten the unquestioned assumption of daily life, the presupposition of every scientific experiment, and the meaning of every scientific generalisation. They cannot be ignored.

On the other hand, threaten as they may, these difficulties can never modify our attitude either towards practical action or scientific theory. Beliefs which were inevitable before remain inevitable still. The supreme act of instinctive faith involved in the perception of external objects stands quite unshaken. Whatever we may think of Berkeley, we cannot give up Dr. Johnson. "Seeing," says the proverb, "is believing"; and it speaks better than it knows.

VI

Can we, then, adopt a middle course, and, imitating the serene acquiescence of Hume, accept the position of sceptics in the study and believers in the market-place? This seems eminently unsatisfactory; and, since believers on this subject we must perforce remain, it behoves us to consider how, and on what terms, we can best qualify our scepticism.

Observe, then, that the particular difficulty

which has been occupying our attention arises in the main from the assumption that our common-sense beliefs in the reality and character of material things have no other foundation than the fact that we so perceive them. From such premises it was impossible, it seemed, to infer that they exist otherwise than as they are perceived; and still more impossible to regard the immediate intuition by which we apprehend the object, and the long-drawn sequence of causes by which the object is revealed, as being the same process looked at from different ends.

But this difficulty is greatly mitigated if we hold that our belief in an independent world of material objects, however it may be caused, is neither a conclusion drawn from this or that particular experience nor from all our experiences put together, but an irresistible assumption. Grant the existence of external things, and it becomes possible and legitimate to attempt explanations of their appearance, to regard our perceptions of them as a psychical and physiological product of material realities which do not themselves appear and cannot be perceived. Refuse, on the other hand, to grant this assumption, and no inductive legerdemain will enable us to erect our scientific theories about an

enduring world of material things upon the frail foundation of successive personal perceptions.

If this does not seem clear at first sight it is, I think, because we do not consider our experiences as a whole. A limited group of experiences—say Faraday's experiments with electro-magnets—may guide us into new knowledge about the external world, including aspects of that world which are not open to sense perception. But then these experiences assume that this external world exists, they assume it to be independent of perception, they assume it to be a cause of perception. These assumptions once granted, experiment may be, and is, the source of fresh discoveries. But experiment based on these assumptions never can establish their truth; and if our theory of knowledge requires us to hold that "no proposition should be entertained with greater assurance than the proofs it is built on will warrant," our fate is sealed, and we need never hope to extricate ourselves from the entanglements in which a too credulous empiricism has involved us. This means that one at least of the inevitable beliefs enumerated in the first lecture—the belief in an external world—is a postulate which science is compelled to use but is unable to demonstrate.

How, then, are we to class it? It is not a law of thought in the accepted meaning of that expression. We are not rationally required to accept it by the very structure of our thinking faculties. Many people, indeed, theoretically reject it; none, so far as I know, regard it as self-evident. On the other hand, it is not an inference from experience; neither is it an analytic judgment in which the predicate is involved in the subject. Described in technical language, it would seem to be *a priori* without being necessary, and synthetic without being empirical — qualities which, in combination, scarcely fit into any familiar philosophic classification.

According to the view which I desire to press in these lectures, this marks a philosophic omission. I regard the belief in an external world as one of a class whose importance has been ignored by philosophy, though all science depends on them. They refuse to be lost in the common herd of empirical beliefs; though they have no claim to be treated as axioms. We are inclined to accept them, but not rationally compelled. The inclination may be so strong as practically to exclude doubt; and it may diminish from this maximum to a faint feeling of probability. But, whatever be the strength

of these beliefs, and whatever the nature of their claims, the importance of the part they play in the development and structure of our current creed cannot easily be exaggerated.

Before, however, I consider other specimens of this class, I must interpolate a long parenthesis upon probability. I have just described these fundamental beliefs as being " probable " in varying degrees. Gradations of probability are familiar to the mathematical theorist. Are we, then, here concerned with probability as conceived by the mathematician ? It is evidently essential to settle this question before proceeding with the main argument ; and I propose, therefore, to turn aside and devote the next lecture to its consideration.

LECTURE VII

PROBABILITY, CALCULABLE AND INTUITIVE

I

I WISH I were a mathematician. There is in the history of the mathematical sciences, as in their substance, something that strangely stirs the imagination even of the most ignorant. Its younger sister, Logic, is as abstract, and its claims are yet wider. But it has never shaken itself free from a certain pretentious futility: it always seems to be telling us, in language quite unnecessarily technical, what we understood much better before it was explained. It never helps to discover, though it may guarantee discovery; it never persuades, though it may show that persuasion has been legitimate; it never aids the work of thought, it only acts as its auditor and accountant-general. I am not referring, of course, to what I see described in recent works as "modern scientific logic." Of this I do not

presume to speak. Still less am I referring to so-called Inductive Logic. Of this it is scarce worth while to speak.[1] I refer to their more famous predecessor, the formal logic of the schools.

But in what different tones must we speak of mathematics! Mill, if I remember rightly, said it was as full of mysteries as theology. But while the value of theology for knowledge is disputed, the value of mathematics for knowledge is indisputable. Its triumphs can be appreciated by the most foolish, they appeal to the most material. If they seem sometimes lost to ordinary view in the realms of abstract infinities, they do not disdain to serve us in the humbler fields of practice. They have helped mankind to all the greatest generalisations about the physical universe: and without them we should still be fumbling over simple problems of practical mechanics, entangled in a costly and ineffectual empiricism.

But while we thank the mathematician for his aid in conquering Nature, we envy him his powers of understanding her. Though he deals, it would seem, entirely with abstractions, they are abstractions which, at his per-

[1] Although, as a matter of fact, I do speak of it in the next lecture.

suasion, supply the key to the profoundest secrets of the physical universe. He holds the clues to mazes where the clearest intellect, unaided, would wander hopelessly astray. He belongs to a privileged caste.

I intend no serious qualification of this high praise when I add that, as regards the immediate subject of this lecture, I mean Probability, mathematicians do not seem to have given ignorant inquirers like myself all the aid which perhaps we have a right to ask. They have treated the subject as a branch of applied mathematics. They have supplied us with much excellent theory. They have exercised admirable skill in the solution of problems. But I own that, when we inquire into the rational basis of all this imposing superstructure, their explanations, from the lay point of view, leave much to be desired.

"Probability," says an often-quoted phrase of Butler, "is the guide of life." But the Bishop did not define the term; and he wrote before the theory of probability had attained to all its present dignities. Neither D'Alembert nor Laplace had discussed it. Quetelet had not applied it to sociology, nor Maxwell to physics. Jevons had not described it as the "noblest creation of the intellect." It is

doubtful whether Butler meant by it exactly what the mathematicians mean by it, and certain that he did not suspect any lurking ambiguity in the expression.

Nor, indeed, would the existence of such ambiguity be commonly admitted by any school of thought. The ordinary view is that the theory of probabilities is, as Laplace described it, "common sense reduced to calculation." That there could be two kinds of probability, only one of which fitted this description, would be generally regarded as a heresy. But it is a heresy in which I myself believe; and which, with much diffidence, I now propose to defend.

II

The well-known paradox of the theory of probabilities is that, to all seeming, it can extract knowledge from ignorance and certainty from doubt. The point cannot be better put than by Poincaré in discussing the physical theory of gases, where the doctrine of probability finds an important application. Let me give you his view—partly in paraphrase, partly in translation. "For omniscience," he says in substance, "chance would not exist. "It is but the measure of our ignorance. When

"we describe an event as accidental we mean "no more than that we do not fully compre- "hend the conditions by which it was brought "about.

"But is this the full truth of the matter? "Are not the laws of chance a source of know- "ledge? And, stranger still, is it not some- "times easier to generalise (say) about random "movements than about movements which "obey even a simple law—witness the kinetic "theory of gases? And, if this be so, how "can chance be the equivalent of ignorance? "Ask a physicist to explain what goes on in a "gas. He might, perhaps, express his views "in some such terms as these: 'You wish me "to tell you about these complex phenomena. "If by ill luck I happened to know the laws "which govern them, I should be helpless. I "should be lost in endless calculations, and "could never hope to supply you with an "answer to your questions. Fortunately for "both of us, I am completely ignorant about "the matter; I can, therefore, supply you "with an answer at once. This may seem "odd. But there is something odder still, "namely, that my answer will be right.'"

Now, what are the conditions which make it possible thus to extract a correct answer from

material apparently so unpromising? They would seem to be a special combination of ignorance and knowledge, the joint effect of which is to justify us in supposing that the particular collection of facts or events with which we are concerned are happening "at random." If we could calculate the complex causes which determine the fall of a penny, or the collisions of a molecule, we might conceivably deal with pennies or molecules individually; and the calculus of probability might be dispensed with. But we cannot; ignorance, therefore, real or assumed, is thus one of the conditions required to provide us with the kind of chaos to which the doctrine of chances may most fittingly be applied. But there is another condition not less needful, namely, knowledge—the knowledge that no extraneous cause or internal tendency is infecting our chaotic group with some bias or drift whereby its required randomness would be destroyed. Our penny must be symmetrical, and Maxwell's demons [1] must not meddle with the molecules.

[1] Maxwell, as all who interest themselves in physics are aware, arrived at very interesting conclusions by considering what would happen if little demons interfered with the random motions of the molecules constituting a gas.

The slow disintegration of radium admirably illustrates the behaviour of a group or collection possessing all the qualities which we require. The myriad atoms of which the minutest visible fragment is composed are numerous enough to neutralise eccentricities such as those which, in the case of a game of chance, we call "runs of luck." Of these atoms we have no individual knowledge. What we know of one we know of all; and we treat them not only as a collection, but as a collection made at random. Now, physicists tell us that out of any such random collection a certain proportion will disintegrate in a given time; and always the same proportion. But whence comes their confidence in the permanence of this ratio? Why are they so assured of its fixity that these random explosions are thought to provide us with a better time-keeper than the astronomical changes which have served mankind in that capacity through immemorial ages? The reason is that we have here the necessary ignorance and the necessary knowledge in a very complete form. Nothing can well exceed our ignorance of the differences between one individual radium atom and another, though relevant differences there must be. Nothing, again, seems better assured

than our knowledge that no special bias or drift will make one collection of these atoms behave differently from another. For the atomic disintegration is due to no external shock or mutual reaction which might affect not one atom only, but the whole group. A milligram of radium is not like a magazine of shells, where if one spontaneously explodes all the rest follow suit. The disruption of the atom is due to some internal principle of decay whose effects no known external agent can either hasten or retard. Although, therefore, the proportion of atoms which will disintegrate in a given time can only be discovered, like the annual death-rate among men, by observation, yet once discovered it is discovered for ever. Our human death-rate not only may change, but does change. The death-rate of radium atoms changes not. In the one case, causes are in operation which modify both the organism and the surroundings on which its life depends. In the other case, it would seem that the average of successive generations of atoms does not vary, and that, once brought into existence, they severally run their appointed course unaffected by each other or by the world outside.

So far we have been concerned with groups

or collections or series; and about these the doctrine of chances and the theory of error may apparently supply most valuable information. But in practical affairs — nay, even in many questions of scientific speculation—we are yet more concerned about individual happenings. We have, therefore, next to ask how we can infer the probability of a particular event from our knowledge of some group or series to which it belongs.

There seems at first sight no difficulty in this, provided we have sufficient knowledge of the group or series of which the particular event is a member. If we know that a tossed penny will in the long run give heads and tails equally often, we do not hesitate to declare that the chances of a particular throw giving "heads" are even. To expect in any given case heads rather than tails, or tails rather than heads, is inconsistent with the objective knowledge of the series which by hypothesis we actually possess.

But what if our information about the group or series is much less than this? Suppose that, instead of knowing that the two possible alternatives do in fact occur equally often, we are in the less advantageous position of knowing no reason why they should *not* occur equally often. We ought, I suppose, still to regard the

chances of a particular toss as even; although this estimate, expressed by the same fraction ($\frac{1}{2}$) and held with the same confidence, is apparently a conclusion based on ignorance, whereas the first conclusion was apparently based on knowledge.

If, for example, we know that a die is fairly made and fairly thrown, we can tell how often a particular number will turn up in a long series of throws, and we can tell what the chances are that it will turn up on the occasion of a single throw. Moreover, the two conclusions seem to be logically connected.

But if we know that the die is loaded we can no longer say how the numbers will be distributed in a series of throws, however long, though we are sure that the distribution will be very different from what it would have been had the die been a fair one. Nevertheless, we can still say (before the event) what the chances are of a particular number turning up on a single throw; and these chances are exactly the same whether the die be loaded or whether it be fair—namely, one-sixth. Our objective knowledge of the group or series has vanished, but, with the theory of probability to help us, our subjective conviction on this point apparently remains unchanged.

There is here, surely, a rather awkward transition from the "objective" to the "subjective" point of view. We were dealing, in the first case, with groups or series of events about which the doctrine of chances enabled us to say something positive, something which experience would always confirm if the groups or series were large enough. A perfect calculator, endowed with complete knowledge of all the separate group members, would have no correction to make in our conclusions. His information would be more complete than our own, but not more accurate. It is true that for him "averages" would have no interest and "chance" no meaning. Nevertheless, he would agree that in a long series of fair throws of a fair die any selected face would turn up one-sixth times as often as all the others taken together. But in the second case this is no longer so. Foresight based on complete knowledge would apparently differ from foresight based on the calculation of chances. Our calculator would be aware of the exact manner in which the die was loaded, and of the exact advantage which this gave to certain numbers. He would, therefore, know that in asserting the chance of any particular number turning up on the first throw to be one-sixth, we were wrong. In

what sense, then, do we deem ourselves to have been right ?

The answer, I suppose, is that we were right *not* about a group of throws made with *this* loaded die, but about a group of such groups made with dice loaded at random—a group in which "randomness" was so happily preserved among its constituent groups that its absence within each of these groups was immaterial, and no one of the six alternative numbers was favoured above another.

A similar reply might be given if we suppose our ignorance carried yet a step further. Instead of knowing that our die was loaded, and being ignorant only of the manner of its loading, we might be entirely ignorant whether it was loaded or not. The chances of a particular number turning up on the first throw would still be one-sixth. But the series to which this estimate would refer would neither be one composed of fair throws with a fair die, nor one composed of a series of throws with dice loaded at random, but one composed of a series of throws with dice chosen at random from a random collection of dice, loaded and not loaded !

It seems plain that we have no experimental knowledge of series piled on series after this

fashion. Our conclusions about them are not based on observation, nor collected from statistics. They are arrived at *a priori*; and when the character of a series is arrived at *a priori*, the probability of a particular event belonging to it can be arrived at independently by the same method. No reference to the series is required. The reason we estimate the chances against any one of the six possible throws of a die as five to one under each and all of the suppositions we have been discussing is that under none of them have we any ground for thinking any one of the six more probable than another;—even though we may have ground for thinking that in a series of throws made with that particular die, some number, to us unknown, will in fact turn up with exceptional frequency.

The most characteristic examples, therefore, of problems in probability depend for their solution on a bold use of the "principle of sufficient reason." We treat alternatives as equally likely when we cannot see any ground for supposing that one is more likely than another. This seems sensible enough; but how far may we carry this process of extracting knowledge from ignorance? An agnostic declines to offer any opinion on the being of

God because it is a matter about which he professes to know nothing. But the universe either has a spiritual cause, or it has not. If the agnostic is as ignorant as he supposes, he cannot have any reason for preferring the first alternative to the second, or the second to the first. Must he, therefore, conclude that the chances of Theism are even? The man who knows this knows much. He knows, or may know, that God's existence is slightly more probable than his own chance of winning a coup at Monte Carlo. He knows, or may know, the exact fraction by which the two probabilities differ. How, then, can he call himself an agnostic?

Every one must, I think, feel that such reasoning involves a misuse of the theory of probability. But is that misuse without some justification? The theory, unless I misread it, permits, or rather requires, us to express by the same fraction probabilities based on what is little less than complete knowledge, and probabilities based on what is little more than complete ignorance. To arrive at a clear conclusion, it seems only necessary to apply the "law of sufficient reason" to defined alternatives; and it is apparently a matter of perfect indifference whether we apply this law in its

affirmative or its negative shape; whether we say "there is every reason for believing that such and such alternatives happen equally often," or whether we say "there is no reason for thinking that one alternative happens more often than the other." I do not criticise this method; still less do I quarrel with it. On the contrary, I am lost in admiration of this instrument of investigation, the quality of whose output seems to depend so little on the sort of raw material with which it is supplied.

III

My object, indeed, is neither to discuss the basis on which rests the calculus of probabilities—a task for which I own myself totally unfit—nor yet to show that a certain obscurity hangs over the limits within which it may properly be employed. I desire rather to suggest that, wherever those limits are placed, there lies beyond them a kind of probability yet more fundamental, about which the mathematical methods can tell us nothing, though it possesses supreme value as a "guide of life."

Wherein lies the distinction between the two? In this: the doctrine of calculable

probability (if I may so call it) has its only application, or its only assured application, within groups whose character is either postulated, or is independently arrived at by inference and observation. These groups, be they natural or conventional, provide a framework, marking out a region wherein prevails the kind of ignorance which is the subjective reflection of objective "randomness." This is the kind of ignorance which the calculus of probabilities can most successfully transmute into knowledge: and herein lies the reason why the discoverers of the calculus found their original inspiration in the hazards of the gambling-table, and why their successors still find in games of chance its happiest illustrations. For in games of chance the group framework is provided by convention; perfect "randomness" is secured by fitting devices; and he who attempts to modify it is expelled from society as a cheat.

None of these observations apply to the kind of probability on whose importance I am now insisting. If calculable probability be indeed "common sense reduced to calculation," intuitive probability lies deeper. It supports common sense, and it supplies the ultimate ground—be it secure or insecure—of all work-a-day

practice and all scientific theory. It has nothing to do with "randomness"; it knows nothing of averages; it obeys no formal laws; no light is thrown on it by cards or dice; it cannot be reduced to calculation. How, then, is it to be treated? What place is it to occupy in our general scheme?

These are all important questions. But no answer to them can be given till we have pressed somewhat further the line of thought which the discussion in this present lecture has for a moment interrupted. Before I began this long parenthesis on the theory of chance, I was occupied with a most important example of a belief which possesses the highest degree of intuitive probability, but no calculable probability at all. I mean the belief in an independent physical universe. In the next lecture I shall resume the general thread of my argument, and consider another belief of the same kind which is not less—some would say even more—essential to natural science than the one with which I have already dealt. I mean a belief in the regularity of nature.

LECTURE VIII

UNIFORMITY AND CAUSATION

I

In my last lecture but one I dwelt upon the interplay of causes and reasons in one special case—the case of our immediate experiences of the external world, the world in which we move, the world investigated by the physical sciences. No case can indeed be more important; for these immediate experiences are deemed by every man to be his guide through all the hours of his waking life, and by every man of science to supply the evidence on which depends all our knowledge of natural laws.

Yet this very statement suggests the existence of another series of problems not less important and not less closely connected with my general argument. For, how do we get from particular experiences to general laws—from beliefs about individual occurrences to beliefs about the ordering of the universe? These beliefs, looked at from the scientific

point of view, are, as I have so often observed, a natural product. They have a history like other natural products. They are the effects of a long train of causes; and among those causes are some which claim, rightly or wrongly, to be reasons, an uncounted multitude which make no such claim, and others, again, which occupy a doubtful position between the two.

Imagine an external intelligence studying the methods by which earth-born creatures of various types adjust themselves to future circumstances. The most primitive method is, I suppose, no more than simple nervous reaction. The most developed method involves reasoned expectation. And between these two extremes our supposed observer would see a long series of intermediate forms melting into one another by insensible gradation.

From the point of view of the argument I am endeavouring to present to you, this development is of the greatest interest. The creation of a capacity for expectation, and of an inclination to expect a future similar to the past, must be deemed one of the most remarkable triumphs of selection—if to selection it indeed be due. Here we have this irrational mimic of reason, starting from the simplest forms of response

to external stimulus, improving them into such excellent imitations of inductive reasoning as those which lead a chick, no more than a few hours old, to reject food which it has once found nasty [1]; and finally evolving out of these humble beginnings a mode of inference which, according to empirical philosophy, is the true and only source of all our general knowledge, whether of nature or of man.

It must be owned, indeed, that the attempt to treat instinctive expectation as a form of rational inference has been a lamentable failure. By no exercise of ingenuity can beliefs about what is not experienced be logically extracted from particular experiences, multiply them as you will. It is in vain that empirical philosophers attempt to give an air of ration-

[1] Extract from Morgan's "Habit and Instinct," page 40. "A young chick two days old, for example, had learnt to pick out pieces of yolk from others of white of egg. I cut little bits of orange-peel of about the same size as the pieces of yolk, and one of these was soon seized, but at once relinquished, the chick shaking his head. Seizing another, he held it for a moment in the bill, but then dropped it and scratched at the base of his beak. That was enough; he could not again be induced to seize a piece of orange-peel. The obnoxious material was now removed, and pieces of yolk of egg substituted, but they were left untouched, being probably taken for orange-peel. Subsequently, he looked at the yolk with hesitation, but presently pecked doubtfully, not seizing, but merely touching. Then he pecked again, seized, and swallowed."

ality to this leap from the known to the unknown by the use of high-sounding logical titles. "Induction by simple enumeration" is doubtless an imposing name. But those who practise the thing are in no wise improving on their predecessor, the chick. Indeed they lag behind it. For the chick expects—but gives no reason; the empirical philosopher expects—and gives a bad one.

II

Expectation, then, if it is to be rational, can only be rationally extracted from experiences by the aid of one or more general principles. What principles are they?

One of them, at all events, must be the regularity of nature. In some form or other, and to some degree or other, this is assumed in every scientific speculation and in every purposeful action reflectively performed. It is, as you may recollect, one of the "inevitable beliefs of common sense" to which I referred in my first lecture.

But you may also recollect that in the same lecture I pointed out that inevitable beliefs, though we cannot avoid holding them in some shape, are, and have been, held in many shapes;

shapes which vary with the changes in our general outlook on men and things. In what shape, then, should our belief in regularity now be held ?

The shape in which it is very commonly formulated is something of this kind: "everything is caused; and the same causes are always followed by the same effects." This is the so-called "law of universal causation." It has been treated as an assured truth by philosophers of many different schools, though not always for the same reasons; and, so far as the physical universe is concerned, the modern world accepts it without demur. It is, nevertheless, open to criticism from two points of view. It asserts somewhat more about the course of nature than experience suggests, and somewhat less than science requires. Let me take the two points separately.

When I was dealing with ethics I had occasion to point out that if the primitive manifestations of loyalty and love are products of selection, they have developed by a kind of internal momentum, to a point far beyond that to which selection can possibly have carried them. Something of the same kind has happened in the case of the causal postulate. Selection, we must suppose, has produced

the capacity for acquiring habitual expectations; and habitual expectation is induction without reasoning. Like induction, it would not only be useless, but harmful, if no regularity existed; if at any moment the future ceased to bear some resemblance to the past. But the regularity asserted by the law of universal causation is far in excess of this requirement. The law applies to regions which never come within the range of finite experience; and, as regards regions which do come within that range, experience hardly confirms it. We may, of course, attribute the apparent irregularities in nature to our ignorance or our errors; and this, in fact, is what we always do. We must (we think) have observed wrongly or insufficiently; or it may be that a clearer insight would show how apparent aberrations really illustrate some larger law, or depend on conditions at present beyond our ken. Such explanations are easy; and, what is more, they are true. There is no complaint to be made of a verdict in favour of absolute uniformity except that it outruns the evidence. None surely, who understand the meaning of the words they use, will dare to assert that nature *appears* regular. What they *may* assert is, that the more you examine it, the more

regular it appears. The reign of law is always extending. New provinces are always being added to its domains. Anomalies vanish as knowledge grows; and the absolute uniformity which we now only know by faith, we may some day know by sight.

To this "credo" (with reservations) I readily subscribe. But it sounds a little strange in the mouths of some who preach it. Does it not imply that we interpret our experiences in the light of a preconceived scheme of things; that we force our observations into a mould which they do not naturally fit? If, in unravelling a cypher, I come across passages which are unintelligible, I attribute the check to my own ignorance or dullness. Why? Because I know independently that the cypher has a meaning, if only I could find it. But the empirical agnostic professes to know nothing about the world, except what he has observed himself or what other people have observed for him. Why, then, should he suppose perfect regularity to exist when no perfect regularity appears? Why is he not content to accept what he finds, namely, a regularity which is real but incomplete?

It is no reply to say that patient genius is constantly detecting order in apparent chaos.

So it is. And when this happens, by all means rearrange your map of the universe accordingly. But do not argue that chaos is therefore non-existent. The belief in universal causation is not based on argument, nor yet on observation. It depends on what I have described as intuitive probability. And if we refuse to regard nature as liable to lapses from perfect uniformity, this is not because such a theory is unthinkable, not because it is contrary to experience, not because it is incompatible with knowledge, not because it is fatal to purposeful action; for it is none of these things. We reject it because it is out of harmony with the ideal we have formed of what the material universe ought to be and is: and so strong is this speculative prepossession that there is no experimental evidence which would convince a man of science that, when physical causes were the same, physical consequences could be different.

III

But this observation brings me to my second commentary on the formula of universal causation. If, as I have contended, it goes beyond what mere experience suggests, it also falls short of what scientific inference

requires. The uniformity it postulates lacks a certain kind of "structure" which is absolutely necessary if the past is to be explained and the future foreseen. It is not enough for this purpose that the course of Nature should be determined. It must be determined after a particular pattern; its uniformity must conform to a particular type.

At first sight this statement may seem rather obscure. What (you will ask) is this "structure" or pattern whose absence would be so disastrous to knowledge? It is a structure (I reply) which makes it possible to break up the flow of events into intelligible repetitions. It is not enough that the condition of the world at any moment should be strictly determined by its condition at the preceding moment. Such a world would, I suppose, completely conform to the doctrine of uniformity, and obey both in spirit and in letter the law of universal causation. Yet, unless it also conformed to the additional canon I have just laid down, it would provide no basis either for scientific knowledge or for practical decision. The same consequent would always succeed the same antecedent, if and when it recurred. But, unless we accept the cyclic theories of the Stoics, it never would recur. The completest

knowledge of the past would tell us nothing about the future; not because the succession of events was arbitrary or (as the word is commonly misused) miraculous; but because each cross-section of the stream of Time (that is to say, the sum of all contemporaneous facts and events) had to be considered as a single cause, completely determining the whole cross-sections immediately in front of it; and, as a single effect, completely determined by the whole cross-section immediately behind it. Such a world might have a history, but it could never have a science.

The reason is plain. Science requires uniformities even more than uniformity; and a universe such as I have just described has uniformity but no uniformities. The very phrase "laws of nature" shows that it is these subordinate uniformities for which we look. The whole efforts of the skilled investigator are directed towards so isolating the sequences he is examining that his experiments shall become (as the phrase goes) *crucial*. If no such isolation could be effected, it would never be possible to point to some "phenomenon" and say of it "Here is a cause," and to some other "phenomenon" and say of it "Here is its effect." The world, in short, must

have a structure which connects its successive phases in such a way that definite parts of all that exists or happens are knit with peculiar closeness to definite parts of what existed or happened before. It is on these connecting strands that we mainly fix our gaze; they are often difficult to trace, they are sometimes hopelessly entangled; but when we can bring them into clear vision, then, and not till then, we triumphantly say that we have discovered a law of nature.

We are so familiar with this "fibrous" structure of the natural world that it seems almost a matter of course. Mill, for example, assumes it, unconsciously no doubt, through all his exposition of inductive methods: and if he had not assumed it, these methods would have come tumbling about his ears in irreparable ruin. But assuredly neither he nor any other logician has a right to make such an assumption in silence. In spite of many speculative difficulties, there is no principle more vital to knowledge, practical and theoretical, than the principle of "negligibility"; the principle which asserts that sequences can be isolated and repeated, and that vast bodies of contemporaneous facts and happenings may be wholly neglected. It is much more important

than the principle of causation, if by causation is meant, not a working, though possibly imperfect, regularity, but the speculative completeness implied by the phrase "universal causation" as commonly interpreted.

It may be said, and I think with truth, that these observations scarcely apply to a material world conceived in a purely mechanical fashion. In such a world negligibility is theoretically measurable. The mass of Sirius, without doubt, modifies the weight of the pen with which I am writing. But the effect is demonstrably infinitesimal, and negligibility is not assumed, but proved. Laplace's calculator, surveying the universe, would have no difficulty either in fixing his attention on particular repetitions which exemplify the "laws of nature," or in regarding them as integral parts of a single mechanical whole, whose successive phases (if the law of energy dissipation be universal) can never be repeated.

But this does not lighten the difficulty. The world may, or may not, be a single mechanical system; but, if it is, the fact can only be empirically known to us through induction: and induction assumes negligibility, and cannot, so far as I can see, move a step without it. Choose the most perfect experiment on record,

idealise its conditions to your heart's content; for greater security, suppose it repeated even to weariness, how will you be advanced? There are, I suppose, millions of circumstances, for the most part utterly unknown, which have co-existed with all the experiments already tried, but will have vanished before the next experiment is undertaken. Does this disturb you? Do you ask yourself whether, among the unnumbered circumstances in which the world of to-day differs from the world of yesterday, there may not be one which is necessary to the expected effect? Not at all. You brush them aside. You say they may be neglected. And doubtless you do well. But why? Not on any grounds which observation or reasoning can supply, not on any grounds formulated in the logic of induction, or the calculus of chances. You trust yourself to a feeling of antecedent probability;—the intuitive probability on whose importance I dwelt in the last lecture, which is not the flower of experience but its root;—and your trust will sometimes be betrayed.

The principle of negligibility, or (in terms of belief) the belief that observed regularities may often be treated as if they were complete and self-contained cases of cause and effect,

separable from contemporary events, is thus a necessary presupposition of concrete science; and, like other presuppositions, it is incapable of scientific proof. We often hear it said, indeed, that principles of this kind should be regarded as hypotheses verified by an ever-increasing volume of experimental proof. They are found to work; what more can be desired?

But it is not accurate to say that these and other fundamental principles are, or ever have been, regarded either by common sense or science as inferences from experience or as hypotheses requiring verification. Nor is it accurate to suggest that verification differs essentially from any other kind of experimental evidence except in the date of its occurrence. If evidence follows conjecture, but not otherwise, it is called verification; and though, from the point of view of method, this chronological order is of immense importance, from the point of view of logic it is nothing. A doubtful conjecture (let us suppose) is "verified" by experiment. If the experiment had come earlier there would have been no conjecture, but there would have been equal evidence, indeed the same evidence. It is true that without the conjecture there might

have been no experiment, and that without the experiment there might have been no proof. But, though the conjecture occasioned the proof, it certainly adds nothing to its force, and we therefore come back to the question already discussed—namely, whether principles without which no inference from experiences is possible, can be themselves inferred from experiences?—a question to which, as I conceive, only one answer is possible. Experiences may produce habit, and habit may produce expectation, and this process may masquerade as induction. But expectations thus engendered belong to the causal series, not the cognitive. Physiology and psychology may explain them. But they can neither be proved nor treated as axiomatic.

Axiomatic they certainly are not; nor do they possess the universality and precision of outline which we are accustomed to associate with axioms. It is curious, in this connection, to note that the philosophers who are most firmly resolved to root the principle of regularity (they ignore negligibility) in experience always insist on giving it that absolute character which our inferences from experience rarely possess. The notion that fundamental beliefs should be liable to exception, should be capable

of degrees, and should apply unequally in different fields of observation, is as abhorrent to them as to any metaphysician out of the opposite camp. One would suppose, to hear them talk, that, unless causation be universal, experience is worthless.

IV

The region where these uncompromising doctrines show to least advantage is human character. I do not propose to discuss causation and free will; but I may with advantage say something on a less hackneyed theme, namely, negligibility and foreknowledge. The thesis I desire to maintain is that, in dealing with a human character, full foreknowledge is theoretically impossible, even though free will be wholly absent, and the succession of psychic states be completely determined. Practically impossible we know it to be. But most determinists would hold that this impossibility is due partly to our ignorance and partly to our incapacity. We know too little either of the general laws of mind, or of individual character, or of surrounding circumstances, to make accurate forecasts; and, even if we possessed the requisite information, we could not use it,

owing to the irremediable weakness of our powers of calculation. It is this contention that I wish to traverse. I hold that, had we the supernatural powers of Laplace's calculator, armed with a knowledge of the human heart which supernatural powers of observation could alone supply, we should still fail, because we are face to face with that which is inherently incalculable.

The contrary opinion is due, I think, to an imperfect comprehension of the doctrines I have touched on in this lecture. All human foreknowledge depends on detecting old sequences in a new context. The context, of course, is always new. There is never full or complete repetition. But, unless there be partial repetitions embedded in the universal flux, prescience is impossible. This is the doctrine of "negligibility."

Now consider two illustrative examples.

First, imagine yourself standing on the edge of a valley down which a landslip has just let loose the waters of some great reservoir in the hills. The catastrophe is sudden in its onset, brief in its duration, wildly irregular in its character. Even the most tumultuous cataract retains a certain steadiness of outline: and few sights are more impressive than the stationary

waves in a great rapid. But there is here no trace of order imposed on disorder, fixity on motion. The rushing wall of water, spouting into foam over every obstacle it encounters, the tossing flood that follows furiously behind, seem in their brief violence to present the very ideal of incalculable confusion. But we know it is not so. In the presence of such a spectacle our calculator would not feel a moment's embarrassment. He could forecast without difficulty the whole scene down to its minutest eddy; the motions of each drop obey laws with which he was perfectly familiar; and the total effect, catastrophic though it be, is but the sum of all these component examples of natural uniformity.

Turn now and contemplate a calmer scene. Consider the commonplace life of a commonplace man as it develops in the untroubled prosperity of a steady business and a quiet home. Such a career seems as orderly and uniform as the flood I have been describing is terrible and strange. Surely no supernatural calculator is required to cast the horoscope of its hero: for he does, and leaves undone, the same actions, he thinks and leaves unthought the same ideas, as thousands of his contemporaries; and, so far as outward appearance

goes, he is an indistinguishable member of an undistinguished crowd.

Yet, in spite of this, we know him to be unique. There never has been before, nor will there ever be again, another individual exactly like him. A similar statement, it may be urged, can be made about our catastrophic flood. Though this has plenty of parallels, none of them, strictly speaking, are exact. Where, then, lies the distinction on which I am trying to insist? Let me endeavour to mark the contrast.

If the material world be conceived as a mechanical system, the flood in my illustration may be regarded as a piece arbitrarily cut out of it at the whim of the spectator. It possesses no natural unity; and, like the whole of which it is a fraction, the moving particles which compose it do each obey laws which are (we assume) perfectly well known, and have been endlessly exemplified. Its behaviour is the sum of the behaviour of these several parts: and it is by estimating their movements that our imaginary calculator can prophesy its course with absolute exactness. He is never perplexed by the problem of negligibility; for negligibility in such a case can be accurately measured, and our calculator possesses all the

data required for its measurement. In short, the principle of regularity may here be applied in its most uncompromising form; it requires no qualification, nor can it be pressed too boldly or too far.

But the case is otherwise when we have to abandon the strictly mechanical point of view, and investigate regions where negligibility has a small and uncertain application. Such a region is individual consciousness. This possesses a natural or intrinsic unity. Its phases are never precisely repeated; nor can it be regarded as a collection of independent elements, the sequences of which may be separately examined, verified, and repeated. Not only is the whole unique, but the parts are unique also. Or, perhaps it would be more accurate to say that there *are* no parts possessing a fixed character of their own apart from the whole. Not only is everything qualified by everything else, but few of these qualifications are negligible. Perfect repetition is therefore impossible, and our calculator, whatever his powers, could never feel at home with his premises, or secure in his conclusions. The present would always be new, and the future would always be doubtful.

If this seems paradoxical it is, I think, mainly

for two reasons. In the first place, such a doctrine seems inconsistent with the fact that, whatever Laplace's calculator could do, humbler beings like ourselves manage somehow or other to forecast the behaviour of our neighbours with some small measure of success. This, no doubt, is true. But it is in part because the alternatives of behaviour are very few and very definite compared with the infinitely graduated variations of thought, will, and feeling. Action is "canalised." It can flow only along channels engineered for it by circumstances, and among these the choice is commonly small. But the character which lies behind action is complex beyond all power of analysis, and variable beyond all powers of anticipation. The routine which is unwaveringly pursued from month to month and year to year is pursued each day in a different spirit: and often a critical hour strikes when some well-drilled creature of custom, to his own surprise and the scandal of his friends, deserts the ancient ways and wanders suddenly forth into the unknown.

Of course, these violent aberrations are the exception. The more familiar experience is that, in an orderly society, the alternatives of action which need be taken into account are

few, and the "limits of deviation" narrow. Often, therefore, we can anticipate conduct without any real insight into the depths of character or the complexities of motive from which the conduct springs. And truly this is fortunate; for, if mutual comprehension were necessary to social intercourse, how could society exist?

But there is another reason why we take little note of the distinction I am endeavouring to draw between the calculable uniformities of a material world and the incalculable regularities of psychic life. The distinction is rather speculative than practical. It does not affect the routine of daily existence. For, although the course of the material world is calculable, we mortals have neither the time nor the knowledge nor the mental powers required to calculate it. We behave, therefore, towards nature as we behave towards man. We content ourselves with approximations, with analogies, with resemblances. Even if we had the power, we should not have the time to resolve the movement of all the bits of matter with which we have to deal from minute to minute into the exact sequences of which they are composed. We would not if we could. We apply rough methods; we are

satisfied with imperfect results. Nor are these results always more imperfect in the psychic than in the material sphere of observation. The ways (for example) of British weather are even more mysterious than the ways of British men. Why, then, should we interest ourselves in a speculation which tells us, however truly, that perfect foreknowledge is theoretically possible in the first case, but theoretically impossible in the second? In practice it is impossible in both. And with this we must be content.

And yet the speculation is interesting. For the distinction between the two cases lies deep. It has nothing (let me say again) to do with free will. It has nothing to do with our ignorance of facts. It has nothing to do with our intellectual insufficiency. It is due to a fundamental difference between the uniformities of matter and the regularities of mind. Perfect foresight requires perfect repetition, and in the psychic sphere perfect repetition can never happen. Every self is unique; all its experiences are unique; and these unique wholes are not compounded of interchangeable elements obeying identical laws. They do not alter by mere addition, subtraction, or rearrangement of parts. They grow. And

the sequence of one phase upon another faintly resembles that which would prevail in the imaginary universe of which I spoke just now, the universe where all contemporaneous events were treated as the single effect of the immediate past and the single cause of the immediate future. Of such a universe I observed that it would have a history, but could have no science. And though we cannot go so far when speaking of psychic unities, though we cannot rule out psychology or sociology, it must be admitted that no regularities which observation discloses can ever possess the precision which we theoretically attribute to material mechanism. Instructive likenesses we shall find in abundance, complete determination we may assume if we please; but "laws," in the full and strict sense of the term, we shall not find, for they are not there.

NOTE

The shortcomings of mechanism have been discussed by M. Bergson in a manner which no other thinker is likely to rival. He has, however, usually dealt with the subject in connection with *freedom*; whereas in this section I have only dealt with it in

connection with foreknowledge, repetition, and what I have termed the doctrine of "negligibility." He approaches it from the side of reality. I approach it from the side of inductive inference and the law of universal causation

LECTURE IX

TENDENCIES OF SCIENTIFIC BELIEF

I

In the sixth and eighth lectures of this course I dealt with two inevitable beliefs which lie at the root of all science and all practice—the beliefs that an independent, or, as it is commonly called, an "external" world exists, and the belief that the world, whether external or internal, has at least a measure of regularity. In the seventh lecture I interpolated a discussion upon probability; and showed, or attempted to show, that we must take account of a kind of probability other than that which, in the hands of mathematicians, has so greatly contributed to knowledge.

If, now, we consider these subjects in their mutual relation, we perceive that an "inevitable" belief is one which possesses the highest degree of this intuitive probability. These are two descriptions of the same quality—one emphasising the objective, the other the subjective, aspects of a single fact.

But this at once suggests a further inquiry. Probability is evidently a matter of degree. A belief may be more probable or less probable. Inevitableness, on the other hand, seems at first sight to be insusceptible of gradation. It is, or it is not. Yet this extreme definiteness vanishes if we regard it as a limiting case—as the last term of a series whose earlier members represent varying degrees of plausibility. On this view we should regard our beliefs about the universe as moulded by formative forces, which vary from irresistible coercion to faint and doubtful inclination. Beliefs in the reality of the external world and in its regularity are important products of the first. I now propose to call attention to some beliefs which are due to the less obvious action of the second. Both kinds, whether capable of proof or not, are more or less independent of it. Both are to be regarded rather as the results of tendencies than as the conclusions of logic.

I am well aware that a doctrine like this will find few admirers among systematic thinkers. Inevitable beliefs which are fundamental without being axiomatic; which lack definiteness and precision; which do not seem equally applicable to every field of experience; which do not claim to be of the essence of our under-

standing, like the categories of the critical philosophy, or the so-called laws of thought, have little to recommend them to philosophers. And when inevitableness is treated as merely an extreme form of plausibility, when guidance is discovered in tendencies which are weak and of uncertain application, leading to error as well as to truth, their objections will scarcely be mitigated.

Many of those who look at these problems from (what they deem to be) a strictly scientific point of view are not likely to be more favourable. Their loyalty to experience takes the form of supposing that men accumulate knowledge by peering about for " sequences " among " phenomena," as a child looks for shells upon the beach—equally ready to go north or south, east or west, as the humour of the moment moves him. They would regard any antecedent preference for this or that sort of explanation as a sin against the categorical imperatives of intellectual morals. Science, they think, should have no partialities: and as the honest investigator " entertains no belief with a conviction the least in excess of the evidence,"[1] so he will resist any leaning toward one kind of conclusion rather than another.

[1] See Lecture VI.

Such is their view of scientific duty. Scientific practice, however, has been otherwise.

That the practice of ordinary humanity has been otherwise seems indeed sufficiently plain. The folk-lore, the magic, and the religions of primitive races, with all their unborrowed resemblances, are there to attest it. But these (you will say) are superstitions. The objection is not, I think, relevant; yet, for the sake of peace, let us pass to what is not regarded as a superstition, namely, morality. Here you have the singular spectacle of a close agreement among moralists as to the contents of the moral law, and a profound disagreement as to the grounds on which the moral law is to be accepted. Can the power of "tendency" be better shown? Can there be a clearer illustration of the way in which it may guide belief and anticipate proof?

II

But our business to-day is neither with magic nor morality. It is with physical science. When we survey man's strivings to understand the world in which he lives, can we detect any secular leanings towards certain types of belief, any deep-lying inclination to guess by prefer-

ence in one direction rather than another? We surely can. There are some answers, for example, which we refuse to take from experiment and observation. I have already referred to one such case in connection with causation. No man of science can be provoked, by any seeming irregularities, into supposing that the course of nature is subject to lapses from the rule of perfect uniformity. Consider, again, another case, where the tendency is far less strong, but where few can doubt that it is real. I refer to the deep-seated reluctance felt by most physicists to accept as final any scientific explanation which involves a belief in "action at a distance"—a reluctance which is the more remarkable since action at a distance seems a familiar fact of experience, while action by contact, when you attempt to work it out in detail, seems hard to comprehend.

But there are tendencies feebler and less general than these which give much food for reflection. Consider, for example, the familiar history of atomism. At least as far back as Democritus we find the confident assertion that the world consists of atoms, and that its infinite variety is due to the motions and positions of immutable and imperceptible units, which, if they are not exactly alike, at least differ less

among themselves than do the visible objects into which they are compounded. Through successive centuries this theory never died. With the revival of learning and the beginning of modern science it burst into fresh life. It was believed in firmly by Bacon, the prophet of the new era. It was treated as almost self-evident by philosophers like Gassendi and Hobbes. Boyle held it in its most uncompromising form. Newton assumed it without question. After a period of varying fortunes in the eighteenth century, a modification of it in the hands of Dalton started a new era in chemistry. Taken over by the physicists, it now lies at the root of the modern theory of gases and liquids; the modern theory of matter, the modern theory of heat, and the modern theory of electricity.

This is a very strange story; and it is not really made less strange by those who emphasise the differences between the atoms of Democritus, which are the theme of its first chapter, and the electrons of Sir Joseph Thomson, which appear in its last. Different indeed they are; but, though the difference be great, the agreement is fundamental.

There are some who think that the achievement sung by Lucretius is lessened by showing that the ancients who believed in atoms had

no experimental warrant for their convictions. And this is perfectly true. They had not. Nor had Bacon, nor Gassendi, nor Hobbes, nor Boyle, nor Newton. But this only brings into clearer relief the point I desire to emphasise. If experience did not establish the belief, whence came it? If it represents nothing better than an individual guess, why did it appeal so persistently to leaders of scientific thought, and by what strange hazard does it turn out to be true? It is certainly curious that Tyndal, in a once famous address to the British Association at Belfast, should have sketched the story from Democritus to Lucretius, and from Lucretius to 1874, without ever putting these questions to his audience, or, so far as I know, to himself.

But the Atomic Theory is by no means the only example of tendencies which have played an important part in the evolution of science. There are other beliefs, or kinds of beliefs, of the most far-reaching importance which have almost exactly similar characteristics. They anticipate evidence, they guide research, and in some shape or other they turn out to be true.

Consider, for example, the group of beliefs which may be described generally as beliefs in persistence, or beliefs in conservation—the

kind of belief which has been applied at different periods, and by different schools of scientific thought, to matter, mass, bulk, weight, motion, force, heat, and energy. As every one knows, these ascriptions have not always been correct. But this only emphasises the strength of the tendency. Weight was at one time supposed to be invariable. We know now that the weight of a body varies with its position relatively to other bodies. It is different, for example, at the poles from what it is at the Equator. But how was the error discovered? Not by experiment. There were experiments, no doubt. But those who undertook them already believed in the law of gravitation; and the law of gravitation made it necessary to distinguish the mass of any given fragment of matter both from its weight and from the occult quality of gravity, which is one of the factors on which its weight in any given situation depends. The desire for conservation was not, however, defeated; since physicists, till within the last few years, regarded both mass and gravity as unalterable characteristics of all material bodies.

Again, consider the case of heat. This also has been regarded by powerful schools of scientific thought as a substance that was "conserved." It is so regarded no longer.

But is the inclination to believe in conservation thereby defeated? Not at all. Though heat may vanish, energy remains, and heat is a form of energy.

This doctrine of the conservation of energy is indeed the crowning triumph of the tendency I am discussing, and provides the best illustrations of its strength. For natural philosophers, intent on finding conservation wherever they could, started too boldly on their quest. Descartes regarded the conservation of motion as a self-evident inference from the rationality of God. It is true that he neither had experimental evidence of his doctrine, nor could he, under any circumstances, have obtained it; for the energy of motion, as he incorrectly described it, is not conserved. Leibnitz described it correctly, and had as great a confidence as his predecessor in its conservation, and as little proof to support him. So confident indeed was he, and so independent of experimental evidence was his faith, that he dogmatically asserted that, when motion seemed to disappear, what was lost by the bodies which we see, was exactly taken up by their component elements which we do not see; so that nothing in the nature of what he called *vis viva* was either lost or created. That this

transformation of energy from molar to molecular motion is constantly occurring we now have sufficient proof. But Leibnitz had no proof; and apparently thought none was required other than the Cartesian deduction from the rationality of God. He made a bold anticipation of experience, with nothing to support him but *a priori* inclination.

His anticipation, however, was not only bold; it was fortunate. Kinetic energy may really be transformed from molar to molecular motion, and suffer no variation. It is conserved. On the other hand, it may not. It may altogether cease, and what becomes of conservation then?

The scientific formula which satisfies both the facts of the case and our desire for conservation is well known.[1] Energy, we are taught, is of two kinds: kinetic and potential energy—energy in act and energy in possibility. Each may turn into the other, and is continually so turning. Each, therefore, may vary in quantity, and does vary in quantity. It is only their sum which is indestructible.

Few scientific generalisations have been more fruitful; few have been accepted on more slender evidence; none are more certain;

[1] See note at the end of the Lecture.

none more clearly illustrate our natural appetite for beliefs of conservation. For, indeed, to the over-critical this sort of conservation must needs leave something to be desired. When we assert the indestructibility of matter we mean that a real entity continues through time unchanged in quantity. But the word has a less obvious meaning when it is applied to energy. The propriety of describing motion as energy seems indeed clear enough; and if all energy were energy of motion, and if energy of motion were always conserved, the conservation of energy would be on all fours with the conservation of matter. But this is not the case. In spite of Leibnitz, the amount of *vis viva* is not indestructible. What, then, happens when some of it is destroyed? In that case, says science, energy changes its form but not its quantity. Energy of motion becomes energy of position. What was kinetic becomes potential; and, as the transformation is effected without loss, the principle of conservation is saved.

When, however, energy thus becomes potential, in what sense does it still exist, and why do we still call it energy? Energy suggests "doings" and "happenings." In the case of "potential" energy there are no "doings"

and no "happenings." It is "stored"; and stored it may for ever remain, hibernating (as it were) to all eternity, neither changing nor causing change.

I do not quarrel with this; but I ask myself why "energy" should be treated more leniently than "force." Though force is now known not to be "conserved," ordinary thought attributes to it a certain continuity of existence even when it does not show itself in motion. Force may be exerted though nothing moves; as, for example, by a book pressing on a table. But this view is profoundly unsatisfactory to many scientific thinkers. For them force is nothing apart from "acceleration"; it does not represent a cause, it only measures an effect. And if in our ordinary moments we think otherwise, this (they think) is simply because we illegitimately attribute to matter something which corresponds to muscular effort in man.

It is not, perhaps, so easy as these critics suppose to extrude from scientific thought (I say nothing of scientific language) this notion of latent force—force which would produce movement if it could; and is actively, though imperceptibly, striving to show itself in motion. But why should they try? They welcome

potential energy—why should they anathematise latent force ?

I think the answer is to be found in the fact that, whether force has, or has not, any being apart from acceleration, it is certainly *not* conserved ; while, if energy be as real when it is potential as when it is kinetic, it certainly *is* conserved. A lapse into anthropomorphism, therefore, is without excuse in the first case, while a lapse into metaphysics is justified in the second. Any heresy may be forgiven, and any evidence is worth respectful attention when conservation is the thing to be proved.

I have sometimes amused myself by wondering what would have happened about the year 1842 if the conservation of energy had been a theological dogma instead of a scientific guess. Descartes, as I mentioned just now, inferred the conservation of motion from the attributes of God. Colding and Joule used the same argument in favour of the conservation of energy. Now, if a belief in the conservation of energy had been an integral part of religious orthodoxy in the early forties of the last century surely some positivist philosopher would have used Joule's first investigation on Work and Heat to upset the very dogma they were in-

tended to establish. "Here" (he would have said) "you have a believer in these metaphysico-theological methods of discovering the laws of nature; and mark what happens. In true medieval fashion he begins with some fanciful deductions from the way in which he thinks God must have made the world. Fortunately, however, though his principles are medieval, his methods are modern. Not only is he a most brilliant experimenter, but he has the courage to put his own speculations to an experimental test. He takes the minutest precautions, he chooses the most favourable conditions, and what happens? Does he prove his case? Do his results square with his theories? Does he find a fixed relation between work and heat? Does he justify his views of God? Not at all. Between his lowest determination of the mechanical equivalent of heat, and his highest, there is an immense and lamentable gap. What does he do? He takes their mean value:—a very proper method if he knew there *was* a mechanical equivalent of heat; a very improper method if the reality of such an equivalent was the thing to be proved. Clearly, if he had not put his theological opinions into his scientific premises when he began his experiment, he never would have got them

out again as scientific conclusions when he had reached its end."

For my own part, I think this imaginary critic would, at that date, have had something to say for himself—supposing always we are prepared to accept his presuppositions about scientific method. If sound reason and intellectual integrity require us to follow the lead of observation and experiment with no antecedent preference for one class of conclusions rather than another, then no doubt Joule and a long line of distinguished predecessors were the spoilt children of fortune. They made their discoveries in advance of their evidence, and in spite of their methods. If they turned out to be right, or, at least, on the right road, what can we do but criticise their credulity and wonder at their luck? unless, indeed, their luck be a form of inspiration.

Before leaving beliefs of conservation, I must say one more word about the most famous of them all—the belief in the conservation of matter. This was an important article in the scientific creed of the early atomists, who had no better evidence for it than they had for the Atomic Theory itself. The material "substance" of the medieval Aristotelians was, I imagine, also conserved; though as all that

could be known about it were its qualities, and as these were not necessarily conserved, the doctrine in practice did not, perhaps, amount to much. Then came the theory which, chiefly in the hands of Boyle [1] at the end of the seventeenth century, initiated modern chemistry. What was conserved, according to this view, was not a metaphysical substance with detachable qualities, but elementary kinds of matter with inseparable qualities; and out of these qualified entities was compounded the whole material universe. I may incidentally observe that a company promoter who should issue a prospectus based on no better evidence than Boyle could advance for this tremendous theory would certainly be in peril of the law. Yet Boyle was right: and, notwithstanding subsequent developments, his conjecture remains the corner-stone of modern chemical research.

Now, what is it that we intend to assert when we say that matter is conserved, or is indestructible? We certainly do not mean that its qualities never suffer change: for most of those which are obvious and striking are always liable to change. If you sufficiently vary

[1] I got this view of Boyle's relation to modern chemistry from Ostwald's work.

temperature or pressure; if you effect chemical composition or decomposition, the old characteristics will vanish and new characteristics will take their place. What, then, is conserved?

In the first place, the lost qualities can (in theory) always be restored, though not always without the expenditure of energy. Water never ceases to be convertible into steam, nor steam into water. The characteristics may vanish, but in appropriate conditions they will always reappear.

Now science, as we have just seen, is tolerant of this notion of latency or potentiality, and is ready enough to use it in aid of beliefs in conservation. It was so used in connection with heat when heat was regarded as a material substance. It is still so used in connection with energy, which is sometimes described as an immaterial substance. But (as I have already noted) it has never been so used in connection with matter. The reason, I suppose, is that the conservation of matter is much more a belief of common sense than the conservation of energy. Energy is a conception which has but recently been disengaged from other conceptions, like force and momentum, and has but recently been associated with heat, with chemical reactions, with changes of

physical phase, and with electro-magnetic phenomena. It is, therefore, a remote and somewhat abstract product of scientific reflection; and science may do what it will with its own.

The notion of matter, on the other hand, is the common possession of mankind. Whatever difficulties it may present to reflective analysis, it presents none to our work-a-day beliefs. We are quite ready to regard it as indestructible; but we are not ready to combine this conviction with the view that it possesses no single characteristic which may not be temporarily etherealised into a "potentiality." On such terms the eternal and unchanging identity of this or that parcel of matter would seem a difficult and elusive doctrine, inappropriate to the familiar and substantial world in which we suppose ourselves to live. A belief in the conservation of matter has therefore always, or almost always, carried with it a belief in the unchanging continuity of at least *some* material qualities; though as to what these qualities are there has been much dispute.

Descartes, though not consistent, found unchanging continuity in the attribute of size; so also did Hobbes. I presume that the older

atomists, who explained the appearances of matter by the shape of its constituent atoms, would have regarded both atomic form and atomic magnitude as persistent. But it was the assumption that the same piece of ponderable matter always possessed the same gravitating power, and that the same gravitating power was always associated with the same mass, which, in the hands of Lavoisier, made so great a revolution in eighteenth-century chemistry. Matter might change its size, its shape, its colour, its phase, its power of acting and reacting; but its mass and the quality which caused its weight it could not change; these characteristics were always associated with each other, and were never in abeyance.

To Lavoisier this double principle seemed self-evident. It was not a hypothesis that required testing, but a touchstone by which other hypotheses might safely be tested. If, in the course of some chemical operation, weight increased, then no further proof was required to show that mass had increased also, and that matter had been added. If, on the other hand, weight diminished, then no further proof was required to show that mass had diminished also, and that matter had been subtracted.

Whatever other qualities matter might gain or lose, mass and gravity were indestructible and unchanging.

Men of science seemed, on the whole, content silently to assume these principles of conservation without inconveniently raising the question of evidence. Philosophers have not always been so cautious. Kant supposed himself to have demonstrated them *a priori*. Schopenhauer followed suit. Spencer declared their contraries to be inconceivable. Mill said they were proved by experience. In short, all these eminent thinkers vied with each other in conferring upon this doctrine the highest honours permitted by their respective philosophies. But apparently they were hasty. Recent discoveries have changed our point of view. Mass (it seems) is no longer to be regarded as unchanging. When bodies move at speeds approaching the velocity of light their mass rapidly increases; so that this quality, which is peculiarly characteristic of matter, must be removed from the category of those which persist unchanged, and placed in the category of those which change but can always be restored. Are we so to class gravitation? Would the weight of a body moving nearly at the speed of light increase as, in like circum-

stances, its inertia increases? If the answer is "no," then the link is broken which has for long been thought to connect gravity and mass. If the answer is "yes," then what Kant regarded as certain *a priori* is false; what Spencer regarded as "inconceivable" is true; another carrier of "persistence" is lost, and some fresh characteristic must be found which will remain unchanged through all time, and under all conditions.

If this characteristic should turn out to be electric charge, what a curious light it will throw upon our tendency to "beliefs of conservation"! After long seeking for some indestructible attribute of matter; after taking up and rejecting size, shape, weight, mass, and (perhaps) impenetrability, we shall at last find the object of our quest in a conception which has (I suppose) been clearly realised only within the last hundred years, about which our senses tell us nothing, and of which the general run of educated mankind are still completely ignorant!

[1] In this chapter, especially in that part of it which deals with beliefs of conservation, I am greatly indebted to Meyerson's "Identité et Réalité." This acute and learned work is not written from the same point of view as that which I have adopted; but this in no way diminishes the amount of my obligation to its author.

III

It is possible, but not, I hope, probable, that some hasty reader may suppose that in this and the preceding lectures I am recommending a new method or instrument of discovery. "If you want to reach truth, follow your unreasoned inclination," may be his summary of my doctrine: brief—but also unjust.

Of the manner in which discoveries are going to be made I say nothing, for I know nothing. I am dealing with the past: and in the historic movements of scientific thought I see, or think I see, drifts and currents such as astronomers detect among the stars of heaven. And, as the law of gravitation will hardly (I suppose) explain the last, so observation, experiment, and reasoning will hardly explain the first. They belong to the causal, not to the cognitive, series; and the beliefs in which they issue are effects rather than conclusions.

Those who feel little sympathy for such a view may be inclined to regard the relatively faint inclinations dealt with in this lecture as ordinary scientific hypotheses confirmed by ordinary scientific methods. This view, as I

have already observed, is not applicable to the inevitable beliefs dealt with in earlier lectures. Whatever philosophers may say after the event the conviction that we live in an external world of things and persons, where events are more or less regularly repeated, has never been treated as a speculative conjecture about which doubt was a duty till truth was proved. Beliefs like these are not scientific hypotheses, but scientific presuppositions, and all criticism of their validity is a speculative after-thought. The same may be said, though with less emphasis and some qualification, about beliefs fostered by the intellectual tendencies considered in this chapter. These, as we have seen, are many. They are often inconsistent; they are never inevitable; and they perpetually change their form under the pressure of scientific discovery. Atomism in one shape follows atomism in another; doctrines of conservation rise, fall, and rise again; incredulity about "action at a distance" breeds explanations whose failure (in the case of gravity) leaves the hope of final success untouched.

Now, it would be an error to say that science does not, when it can, apply to these various theories its ordinary methods of verification.

They are in a different position from inevitable beliefs, which can hardly be verified because the process of verification assumes them. Yet they must not be confounded with ordinary scientific hypotheses, for they are something more and something different. Like these, they are guesses, but they are guesses directed, not by the immediate suggestion of particular experiences (which indeed they sometimes contradict), but by general tendencies which are enduring though sometimes feeble. Those who make them do not attempt the interrogation of Nature wholly free from certain forms of bias. In cross-examining that most stubborn and recalcitrant of witnesses they never hesitate to ply her with leading questions; and, whether this procedure be logically defensible or not, no lover of truth need regret its results.

Readers of M. Bergson's "Creative Evolution" may remember the picture he draws of the *élan vital*—the principle of life—forcing its way along different paths of organic evolution, some without issue or promise of progress; others leading on through regions hitherto untraversed to ends remote and unforeseen. The secular movements of science, as I conceive them, somewhat resemble this process, even though

it be faintly and at a distance. There is in both a striving towards some imperfectly foreshadowed end; and in both the advance is irregular, tentative, precarious, with many changes of direction, and some reversals. Yet I would not press the parallel over-far or plunge too deeply into metaphor. It is enough to say that as, according to M. Bergson, the course followed by organic evolution cannot be wholly due to Selection, so the course followed by scientific discovery, as I read its history, cannot be wholly due to reasoning and experience. In both cases we seem forced to assume something in the nature of a directing influence, and (as I should add, though perhaps M. Bergson would not) of supramundane design. And if "a Power that makes for truth" be required to justify our scientific faith, we must surely count ourselves as theists.

NOTE

Extracts from a letter from Sir Oliver Lodge on certain passages in this lecture relating to Energy and its transformations.

. . . . .

You say, on page 226, "Energy, we are taught, is of two kinds: kinetic and potential energy—energy in act and energy in possibility."

So long as emphasis is laid upon the words "we are taught," I have no objection. People *have* taught that, though I strongly object to such teaching, because I object to the idea "Energy in possibility" or "possible Energy" of any kind. I teach the identity of Energy in much the same terms as the identity of Matter; not merely the conservation, with the idea that one quantity can disappear and another quantity reappear. It is not another quantity, but the same; though it may have been locked up for any length of time. But then it has not been usually taught so, and I think you are dealing with what is usual.

. . . . .

Again, you say on page 227, "Energy suggests 'doings' and 'happenings.'" No, say I, *activity* suggests doings and happenings, and activity is Energy in transformation. Energy alone is something stored, like Capital. The earth's rotational energy, for instance, is stored just as really as, and for a longer time than, the vegetation of the carboniferous epoch.

Lower down you observe that "Force may be exerted though nothing moves." Certainly it may, when resisted by an equal opposite force. But I fully admit that a lot of nonsense has been talked about the acceleration measure of force, as if it were the only measure, and that some criticism on this procedure is useful. But I should not speak of "latent" force; it is real force you have in mind, or at least real stress—*i.e.* two equal and opposite forces. It is latent Activity which becomes active when the other factor, viz. Motion, is supplied or

allowed—*e.g.* by the release of a bent bow, or a wound-up spring, or a raised weight.

So it is also with the Energy of a fly-wheel. That, too, is latent Activity until the other factor, viz. Force, is supplied, *i.e.* when it is employed to overcome resistance, and therefore do work. Otherwise its Motion will be stored to all eternity.

In short, activity, or doing of work, has two factors, Force and Motion. When both are present, work is done; when either is present alone, Energy is stored. Static Energy is the Force factor, with the possibility of a certain range of effectiveness understood; like a head of water, for instance, a certain height above the sea. Kinetic Energy is the Motion factor, with a certain inertia or possibility of Force understood; not Motion alone, but a mass in motion, so that it may be able to overcome resistance.

There is no real reason why one form of Energy should be considered more "actual" or real than another; our eyes appreciate the one form, our muscles could appreciate the other.

. . . . .

In considering cases of Potential Energy, it is wise to realise that our knowledge about Gravitation is altogether too vague to make the case of a raised weight useful. And our knowledge of solid elasticity, though not so insignificant, is small enough to make the case of a bent bow or wound spring not very easy for fundamental contemplation. A case of chemical Energy, like gun-cotton, is in much the same predicament.

But a typical and satisfactory example of Potential

Energy is the case of a vessel of compressed air. Here is Energy stagnant enough, and violent enough when released, and one that can be locked up apparently to all eternity, and yet released by the pulling of a trigger. It represents, however, a case of which we know something concerning the internal mechanism; and we have learnt that in this case the force statically exerted on the walls of a vessel is really a kinetic bombardment of the molecules. In other words, we recognise in this case that Potential Energy is ultimately resolvable into Kinetic. It may be so in the other cases. And on Kelvin's Kinetic Theory of Elasticity, which he showed a tendency in later life to abandon, all strain or stress in Ether may be ultimately due to its ultramicroscopic vortex circulation.

But none of this is yet proven.

. . . . .

The general argument of your lecture deals with the ease with which certain general propositions are accepted as it were intuitively, without real conclusive evidence. I am entirely with you. And the way we feel secure about general laws, when adequate evidence for them is really impossible, has often struck me as remarkable. Even when facts appear to go against them, we question the facts, and find after all that in so doing we have been right.

PART IV

SUMMARY AND CONCLUSION

LECTURE X

SUMMARY AND CONCLUSION

I

Now that we have reached our closing lecture, those who have followed the course from the beginning may, on looking back, find themselves somewhat bewildered by the variety of subjects which I have asked them to consider. Art, History, Morals, the Theory of Probability, the Logic of Perception, the presuppositions of Science, have all been touched on. Themes that might fill volumes—nay, that have filled volumes—are made the text for an hour's discourse. Introduced one after the other with breathless rapidity, each for a moment has been shown under the limelight, and then hurried off the stage to make room for its successor. It seems hard to believe that with such diversity of materials there can be continuity of argument. But the critic who would judge the matter fairly must bear in mind the title of the course, and the pur-

pose for which it has been delivered. My desire has been to show that all we think best in human culture, whether associated with beauty, goodness, or knowledge, requires God for its support, that Humanism without Theism loses more than half its value. Though, therefore, the subjects discussed are embarrassing in their variety, no diminution of their number seems possible. The argument would have broken down had I confined myself to a narrower scope—had I, for example, been content to show the importance of Theism for morality, leaving untouched its importance for science and æsthetic. Such a limitation would have shattered the whole design. No doubt there are precedents for such a procedure. Kant, for instance, kept God out of the critique which dealt with ordinary knowledge, while giving Him a place of honour in the critique which dealt with the moral law. But the procedure has always seemed to me singularly artificial, even in a philosophy which is artificial through and through. In any case, such a limitation is quite inconsistent with the scheme of these lectures. This could not be accomplished by setting up a departmental Deity—even were his department the whole province of ethics. Right conduct is much, but it is not all. We

not only act, but we know, and we admire; nor could I be quite content with any form of Theism which did not sustain in every essential part the full circle of human interests.

II

But when all explanations have been given, and all excuses made, I am well aware that in the actual presentation of my case I have introduced so much illustrative material, and of this material so much is disputable, that some of my hearers may feel themselves distracted rather than enlightened by the number of seemingly subsidiary points of which they are asked to take account. I trust such persons are in a minority; and that, on the whole, my main contention will seem enriched and strengthened, not embarrassed or confused, by the manner of its exposition. Nevertheless, it may not be amiss, before I bring the course to an end, to restate the most important points in the general case I have endeavoured to present.

The root principle which, by its constant recurrence in slightly different forms, binds together, like an operatic leit-motif, the most diverse material, is that if we would maintain

the value of our highest beliefs and emotions, we must find for them a congruous origin. Beauty must be more than an accident. The source of morality must be moral. The source of knowledge must be rational. If this be granted, you rule out Mechanism, you rule out Naturalism, you rule out Agnosticism; and a lofty form of Theism becomes, as I think, inevitable.

It is, I imagine, the application of this method to knowledge which will be most generally resented by those who refuse to acknowledge its validity. In the case of beauty, for example, the point will seem of small importance to those for whom art means little. It may not greatly impress many of those for whom art means much. For it proclaims no new canons of taste. It belittles no æsthetic school. It asks no critic to revise his judgments. It touches the interests neither of artist nor author. It may well be ignored.

With ethics the case is somewhat different. There are, no doubt, sceptics in religion who treat scepticism as a luxury which can be safely enjoyed only by the few. Religion they think good for morals; morals they think good for society; society they think good for themselves. Such persons may well treat the

opinions expressed in the lecture on ethics with benevolent disagreement. But there are more robust thinkers who will not be so lenient. They will reject as intolerable the idea that the morality they desire to preserve depends on a religion they desire to destroy; and any doctrine which, like the present, binds the two more closely together will encounter their uncompromising hostility.

Nevertheless, it is the lectures dealing with intellectual values that will rouse, as I suppose, the most serious opposition. The endeavour to treat our beliefs about the world and our beliefs about God as interdependent will seem to many extravagant, even unnatural. It will be urged that, for all reasonable beings, reason must be the supreme judge in matters of belief. It can neither resign its office nor delegate its authority. Let it then endorse Science, as it must; and establish Theism, if it can; but do not require it to commit the folly of treating truths about which opinions are agreed as dependent on conjectures about which opinions are divided.

This may be excellent advice; but it is hardly to the point. I ask for nothing better than the supremacy of reason: not one of its prerogatives do I desire to curtail. Indeed

(as I have already complained) it is the agnostic empiricists who most obstinately shrink from following it to conclusions they dislike, who mutiny, like some old-time mariners, whenever they are required to navigate unfamiliar seas.

I have no sympathy with the singular combination of intellectual arrogance and intellectual timidity so often presented by this particular school of thought. I like it no better than I like the attitude of those who declare that, since reason is bankrupt, authority should take over its liabilities, however small be the prospect of discharging them in full. My point of view is utterly different. And if I urge that the criticism of common knowledge brings us ultimately to Theism, this involves no intolerable paradox, nor indeed anything very new or strange.

Descartes, for example, thought that all knowledge was based on clear and distinct ideas, and that clear and distinct ideas could be trusted because, being due to God, they were guaranteed by His truthfulness. That there is a God possessing every perfection was independently established by an *a priori* argument into which I need not enter. But the point of interest is that, though Descartes

conceived himself to have found a refuge from scepticism in the famous "I think, therefore I am," he could only get from this narrow assurance to general knowledge by the use of "clear and distinct ideas" certified by divine veracity. If, therefore, belief in one's self was the first of truths, belief in God was the second; and on this second truth all subordinate beliefs, mathematical, physical, and metaphysical, were, in his opinion, ultimately founded. In one sense, and from one point of view, this is no doubt an exact inversion of the argument developed in these lectures. Descartes rests the belief in science on a belief in God. I rest the belief in God on a belief in science. Nevertheless, beneath this contrast there is deep-lying agreement. Both views reject the notion that we possess in the general body of common-sense assumptions and scientific truths a creed self-sufficing and independent, to which we may add at our pleasure Theism in such doses as suit our intellectual palate. Both views, therefore, are profoundly divided, not merely from all that calls itself agnostic, but from much that calls itself religious.

I must not, however, press the parallel too far. Descartes did not, and could not, regard our beliefs as a developing system, which is

not merely increasing by external accretion, like a crystal in its mother-liquid, but is growing and changing through and through like a living organism. Such conceptions were not of his age or country, nor, if they had been, could they have been easily accommodated to his peculiar genius. His was the mathematical temperament, always striving for precise definitions and rigorous proof; always tolerant of any simplification of the concrete complexities of reality, which would make them amenable to deductive treatment. Of this, as a method, we need make no complaint. Within due limits it is invaluable. But Descartes, so to speak, "objectified" it. He assumed that any judgment which could properly be described as "clear and distinct" was not only convenient in form, but true in substance. The world, alas! is not so made. The things which are clear and distinct are usually things of our own creation. Definitions, abstractions, diagrams, syllogisms, machines—such and such like are, or may be, "clear and distinct." But the great facts which we have not made—these, at our present level of knowledge, are never clear and never distinct. Life, the organism, the self, the state, the world, freedom, causality, the flow of time, the relation between mind and

body, between perceiver and perceived, between consciousness and sub-consciousness, between person and person (I say nothing of beauty, of virtue, or of God)—who is there will dare to say that he either finds in these notions, or can put into them without injury, the qualities which Descartes deemed the inevitable marks of real and certain knowledge? Truth, for us, is a plant of a different and of a slower growth. How much indeed of that growth consists in discovering that what we thought was clear is in fact obscure; what we thought was simple is in fact complex; what we thought was distinct is in fact confused; and how helpful are such discoveries to the augmentation of learning!

However this may be, there is nothing in the doctrine of "congruity" which should shock those who are jealous for the supremacy of reason and the dignity of science. It is science itself which assures us that all premises, all conclusions, and all the logical links by which they are connected must be regarded as natural products. It is science itself which assures us that they belong, like all natural products, to the tissue of causes and effects whose lengthening web is continuously thrown off by the loom of time. It is science itself

which requires us to harmonise these two aspects of the knowing process—the one logical and timeless ; the other causal and successive.

But how are they to be harmonised if the causal series is fundamentally non-rational ? Suppose yourself able to observe the development of beliefs in some alien being (say an inhabitant of Mars) as a bacteriologist observes a growing colony of microbes : suppose, further, that your observation showed how these beliefs arose from causes which had in them no tincture of reason, and that, so far as you could see, they were quite unsupported by any independent evidence which—*for you*—had weight or even meaning. Would you rate their value high ? Surely not.

Now it is quite true that when we examine our own system of beliefs we cannot imitate this attitude of complete detachment, since in the very act of examination some of these beliefs are assumed. But we *can* examine the beliefs of other people, and we *do*, as a matter of common-sense practice, rate low the value of the beliefs whose sources we perceive to be non-rational. How, then, can we refuse to apply to ourselves a principle of judgment which we thus apply without scruple to our neighbours ?

Whenever we do so apply it, we shall, I think, be forced to admit that all creeds which refuse to see an intelligent purpose behind the unthinking powers of material nature are intrinsically incoherent. In the order of causation they base reason upon unreason. In the order of logic they involve conclusions which discredit their own premises. Nor is there, as far as I can see, any mitigation of this condemnation to be looked for except by appealing to the principle of Selection. And how far will this help us out of the difficulty?

Just so far as an imitation of intelligent purpose can be a substitute for its reality, but no further. And how far is this? At first sight we might suppose that, at the worst, the cognitive series and the causal series might be harmonised on the basis of natural selection if knowledge never aspired to rise above the level which promoted race survival, if no faculties of knowing were trusted beyond the point where they ceased effectively to foster the multiplication of the species. Up to this point it would seem that, if selection be true, there is congruity between beliefs and their origin. The sequence of events which brought them into being suggests no doubt about their value. This scheme of thought, therefore,

though narrowly restricted, is apparently coherent.

Yet even this modest claim must be deemed excessive: for the speculation on which it rests does violence to its own principles. Manifestly we cannot indulge ourselves in reflections upon the limits of the "knowable" without using our intellect for a purpose never contemplated by selection. I do not allege that our intellect is therefore unequal to the task. I only say that, if it be indeed equal to it, we are in the presence of a very surprising coincidence. Why should faculties, "designed" only to help primitive man, or his animal progenitors, successfully to breed and feed, be fitted to solve philosophic problems so useless and so remote? Why, indeed, do such problems occur to us? Why do we long for their solution?

To such questions Naturalism can neither find an answer nor be content without one. Wearied with unavailing efforts to penetrate the unknown, many not ignoble spirits have preached the wisdom of dulling unhealthy curiosity by the aid of healthy labour. "Let us cultivate our gardens" (they say), seeking no solution of the insoluble.

But the advice is ambiguous. Will the proposed remedy, in their opinion, cure the ill, or

only help us to forget it? If the latter, then, in some circumstances and with some patients, it will doubtless fulfil its promise. Oblivion may be attained by growing vegetables, as by other less reputable expedients. But if absorption in daily labour be recommended as the final stage of a rational cure, it cannot be effectual. No rational cure is, on naturalistic principles, within our reach. Could we empty ourselves of all that makes us men, could we lower our intellectual level to the point where the scope of our mental activities harmonised with their naturalistic source, we should doubtless free ourselves from the malady of vain speculation. But though the remedy, if applied, would be effectual, it would not be rational. Reflective Agnosticism cannot be combined with scientific Naturalism, because reflective Agnosticism is the product of a process which Naturalism inevitably discredits. And if Naturalism be incompatible even with reasoned ignorance, how can we hope to harmonise it with the claims of reasoned knowledge? [1]

The best imitation of creative purpose, therefore, which Naturalism can provide breaks

[1] Let me here parenthetically remind you that again (as I observed in an earlier lecture) the Naturalism of

down where it is most required—namely, at the highest levels of value. I have just shown this in connection with our powers of thought, and the beliefs to which they lead. But the failure is not confined to them. It is as wide as Humanism itself. Wherever we find great intrinsic worth, there we are in a region where the direct effect of selection is negligible. The noblest things in speculation, in art, in morals, possess small survival value; and, though the geniuses to whom we owe them have added greatly to the glory of their race, they have added but little to its animal successes. In the language of these lectures, they are "accidental"—due neither to purpose nor to any arrangement of causes by which purpose is successfully copied.

which I speak is Naturalism in what, from our present point of view, must be regarded as its most plausible shape. Those who have followed, even at a distance, the trend of biological thought are aware that many naturalists of the highest authority are shaken in their allegiance to natural selection. They do not, indeed, exclude it from the evolutionary drama, but they reduce its rôle to insignificance. Why then, you may ask, do these lectures so constantly refer to selection, but say never a word about other theories of organic evolution ?

The answer is that selection, and only selection, really imitates contrivance. Other theories may deal, and do deal, with variation and heredity. But selection alone can explain adjustment ; whence it follows that selection alone can imitate design.

III

You are now in a position to judge how far the hopes held out to you at the beginning of this course have been fulfilled, and to measure the merits and the demerits, the claims and the limitations, of the scheme I have endeavoured to expound.

I disowned, as you remember, any intention of providing you with a philosophical system —not because I despise philosophical systems or those who labour to construct them, but in part because I have none to recommend, and in part because it seems to me doubtful whether at our present stage of development a satisfactory system is possible.

But how (you may ask) does my point of view differ from a philosophical system? It may be a bad system, as it certainly is a most imperfect one. Yet, seeing that it touches on everything in heaven and earth, seeing that its very title embraces God and man, why should it repudiate a description which seemingly is not a whit in excess of its pretensions?

The question thus raised is more than a merely verbal one, and a few observations

upon it may fittingly conclude the course. Note, then, in the first place, that my scheme of beliefs does not show itself unworthy to be considered systematic merely because it is incomplete. All systems are incomplete. All systems, however ambitious, admit their inability to exhaust reality. Nor is its unworthiness due to any mere accident of execution, such as inferior workmanship or defective learning. Its failures are essential and irremediable. They are inseparable from "the point of view."

Let me explain. Every system that deserves to be described as a constructive philosophy —be it dogmatic, critical, empirical, idealist, what you will—conceives itself not merely to be rooted in reason, but to be rationalised throughout. The conceptions with which it works should be sifted, clarified, defined. It should assume nothing which requires proof. It should rest nothing (in the last resort) on faith or probability. It should admit no inexplicable residues.

Philosophers seem to me entirely right if they think that this is what a system ought to be; but not entirely right if they think that this is what any system is, or has ever been. In any case, no description

could be less applicable to the point of view which I am provisionally recommending. The philosopher refuses—in theory—to assume anything which requires proof. I assume (among other things) the common-sense outlook upon life, and the whole body of the sciences. The philosopher admits—in theory—no ground of knowledge but reason. I recognise that, in fact, the whole human race, including the philosopher himself, lives by faith alone. The philosopher asks what creed reason requires him to accept. I ask on what terms the creed which is in fact accepted can most reasonably be held. The philosopher conceives that within the unchanging limits of his system an appropriate niche can be found for every new discovery as it arises. My view is that the contents of a system are always reacting on its fundamental principles, so that no philosophy can flatter itself that it will not be altered out of all recognition as knowledge grows.

This last statement may look like a truism; but it is a truism which few philosophers are, in practice, disposed to accept; and the generality of mankind are perhaps even less disposed to accept it even than philosophers. That there are beliefs which can and should be held,

with the same shade of meaning, by all men, in all ages, and at all stages of culture, is a view to which by nature we easily incline. But it is, to say the least, most doubtful. Language is here no true or certain guide. Even when beliefs have not outgrown the formulas by which they have been traditionally expressed, we must beware of treating this fixity of form as indicating complete identity of substance. Men do not necessarily believe exactly the same thing because they express their convictions in exactly the same phrases. And most fortunate it is, in the interests of individual liberty, social co-operation, and institutional continuity that this latitude should be secured to us, not by the policy of philosophers, statesmen, or divines, but by the inevitable limitations of language.

This, however, by the way. The point I wish to press is that, speaking generally, we must not conceive the development of knowledge as a process of adding new truths to old truths, in the course of which old truths are supplemented but are not changed. It rather resembles the increase of some plastic body which, wherever it takes place, involves a readjustment of every part. Add brick to brick, and you may finish your house, yet never alter

its foundation. Add belief to belief, and you will set up strains and stresses within your system of knowledge which will compel it to move towards some new position of equilibrium.

Sometimes, no doubt, the process is more violent and catastrophic than this metaphor naturally suggests. Then occurs in the moral world the analogue of the earthquake, the lava flood, and the tidal wave, which shatter mountains and sweep cities to destruction. Men's outlook on the universe suffers sudden revolution: the obvious becomes incredible, and the incredible obvious; whole societies lose their balance, and stately systems are tumbled in the dust.

More often, however, the movements of belief are gradual. They resemble the slow rise or fall of ancient coast-lines, where, by imperceptible degrees, sea turns into land, or land into sea. So, without shock or clamour, man smoothly modifies his point of view, till, gazing over the spaces he has traversed, he greatly marvels at the change.

But we must look forward as well as backward. The spaces still to be traversed far exceed those that have been traversed already. We can set no limits to the intellectual voyage

which lies before the race. Even if we arbitrarily limit the life of men to that which is possible under terrestrial conditions, we must anticipate transformations of belief comparable in magnitude with those which already divide us from primitive mankind. How, in circumstances like these, can we hope to sketch, even in outline, an enduring system of philosophy? Why should we succeed where under similar conditions the greatest of our forefathers have already failed?

If, then, we cannot attain to a scheme of belief which, whatever be its shortcomings, is good (so far as it goes) for all time, we must be content with something less. We must put up with what I have called in these lectures "a point of view." We must recognise that our beliefs must be provisional, because, till we approach complete knowledge, all beliefs are provisional. We cannot claim that they are good "so far as they go"; but only that they are as good as we are at present able to make them. And we must recognise that the two statements are profoundly different.

Now, if I were asked what categories or conceptions such a "point of view" required for its expression, I should answer Providence and Inspiration—categories for which systematic

philosophy has so far found no great use. These terms, it must be owned, are now a little the worse for wear. Defaced and battered by centuries of hard usage, they have suffered the fate which the current coin of popular discussion cannot easily avoid. But they have merits negative and positive, which make them peculiarly apt for my present purpose.

In the first place, they do not suggest a philosophy of the universe. They openly evade the great problems of theological metaphysics. No one, for example, would employ them in discussing the essential nature of an Absolute God, or His relation to time, to the act of creation, to the worlds created. They belong to a different level of speculation.

In the second place, they concentrate attention on the humanistic side of Theism, on the relation of God to man, and to man's higher spiritual needs. Divine " guidance "—the purposeful working of informing Spirit—is the notion on which emphasis is specially laid. The term " Providence " suggests this in a broad and general way. The term " Inspiration " suggests it in the narrower sphere of beliefs and emotions. And do not complain that no endeavour is made to explain the mode in which divine guidance works either on

matter or on spirit. These are mysteries as hard of solution as those which surround the action of mind on matter, and of mind on mind. But the difficulties are difficulties of theory, not of practice. They never disturb the ordinary man—nor the extraordinary man in his ordinary moments. Human intercourse is not embarrassed by the second, nor simple piety by the first. And perhaps the enlightened lounger, requesting a club-waiter to shut the window, brushes aside, or ignores, as many philosophic puzzles as a mother passionately praying for the safety of her child.

IV

To some this conclusion of a long and intricate discussion will seem curiously trivial in its unambitious simplicity. Especially will this be true of those who accept empirical Naturalism in any of its forms. "There is (they may admit) something grandiose about the great metaphysical systems which appeals even to those who are least able to accept them. It was no ignoble ambition which inspired their architects. It was no light labour, or trivial ingenuity, which brought them into being. On the other hand (they will say), if naturalistic

methods are more modest, naturalistic results are more secure. They aim lower, but they reach the mark. If the long-drawn "conflict between religion and science" has robbed us of some illusions which we abandon with regret, the knowledge it has spared us we may hold with assurance. But when we turn to the narrow Theism of these lectures, fittingly couched in the outworn language of the pulpit and the Sunday-school, can we find in it either the glory of metaphysical speculation or the security of positive knowledge? It has not the courage to explore the unknowable, nor the power to add to the known. It dare not fly; it will not walk. It is neither philosophy nor science; nor does it seek the modest security of some middle way. How, then, are we to class this strange amalgam of criticism and credulity? What purpose can it serve? To whom will it appeal? Whose beliefs will it alter even by a hair's breadth?"

These are pertinent questions. Let me try to answer them.

The customary claims of Naturalism, which I have here put into the mouth of my imaginary critic, seem to me (as you know) to be quite unreasonable. Otherwise I have no great objection to the statements contained in

his indictment—however little I may agree with its spirit. In particular I admit the charge that the argument of these lectures, elaborate as it may appear, does not after all carry us far beyond the position occupied by uncritical piety and simple faith. Could it be otherwise? If we build, as I build, upon our common-sense beliefs about the natural world, our theories of the supernatural world will surely share the defects inherent in their foundation. It may—or may not—be possible to know all about the evolution of God as the Absolute Idea, while lamentably ignorant of much that pertains to the Particular. But if we begin with the Particular—and that most imperfectly apprehended—we cannot hope to grasp the full reality of the Absolute. On this line of advance the philosopher will not far outstrip the peasant.

When, therefore, my supposed critic satirically asks who it is that I hope to influence, I grant at once that it is not the plain man who already accepts without doubt or commentary a theistic view of the Universe. He is beyond my arguments;—perhaps above them.

Neither do I greatly hope to influence the trained man of speculation, who has already

found a theory of things which satisfies his reason, or is sure that no such theory is within his reach. Even he may, I trust, find in these lectures discussions of some philosophic interest. I ask him to consider whether his system provides an honourable place for the actual beliefs by which his waking life is ruled; whether all the gradations of intuitive probability, from inevitable compulsion to faint inclination, find house-room not merely in his psychology of belief, but in his theory of knowledge; whether he is satisfied with his logic of science, or can bring into one harmonious scheme his creed regarded as a body of rational conclusions and his creed regarded as a bundle of natural effects. If he replies in the affirmative his state is the more gracious. But he is not likely to be interested in my arguments; and assuredly they will not convert him to my views.

I need say nothing about his pretentious imitator, who, under many names, has long been a familiar figure in certain societies. With no deep desire for truth, and poorly equipped for pursuing it, his main ambition is to indicate discreetly that he holds what the fashion of the moment regards as "advanced" views in their most advanced form. Wherein the

quality of "advancement" consists, it might be hard to determine; nor is it (in this connection) a subject worthy of investigation. It is enough to say that "advanced" views must have an air of novelty, must be making some stir in the world, must be sufficiently unorthodox to shock the old-fashioned, and either sufficiently plausible to deceive the simple or sufficiently imposing to overawe them. I do not think that I shall find many converts among members of this class; nor is it to them that I desire to speak.

But there are many persons, both earnest and sincere, to whom the conclusions which modern Naturalism extracts from modern science are a source of deep perplexity and intellectual unrest. Their mood, if I rightly read it, is something of this kind. They would agree that a world where God is either denied or ignored is a world where some higher values are greatly impoverished. They would read the lectures I have devoted to Beauty and Morals with sympathy, if not with agreement. Life, they would admit, is but a poor thing if it does no more than fill with vain desires the brief interval between two material "accidents"—the "accident" which brought it into being, and the "accident" which will

extinguish it for ever. But this (they will say) is no argument. A wise man faces facts, a good man prefers the hardest truth to the most alluring illusion. If there be no ground for assuming a living purpose behind the indifferent mask of nature, let us not fill the vacancy with a phantasm of our own creation. Let us at least sink back into the nothingness from which we rose with our intellectual integrity undamaged. Let all other values perish, so long as rational values remain undimmed.

Here, according to my view, lies the great illusion. Those who in all sincerity, and often with deep emotion, plead after a fashion like this, profoundly misunderstand the situation. They are indeed worthy of respect. They must not be confounded with those unstable souls who ignore God when they are happy, deny Him when they are wretched, tolerate Him on Sundays, but truly call on Him only when life, or fortune, hangs doubtfully in the balance. They are of a different and more virile temper. But are they less mistaken? They search for proofs of God, as men search for evidence about ghosts or witches. Show us, they say, the marks of His presence. Tell us what problems His existence would solve. And when these

tasks have been happily accomplished, then will we willingly place Him among the hypothetical causes by which science endeavours to explain the only world we directly know, the familiar world of daily experience.

But God must not thus be treated as an entity, which we may add to, or subtract from, the sum of things scientifically known as the canons of induction may suggest. He is Himself the condition of scientific knowledge. If He be excluded from the causal series which produces beliefs, the cognitive series which justifies them is corrupted at the root. And as it is only in a theistic setting that beauty can retain its deepest meaning, and love its brightest lustre, so these great truths of æsthetics and ethics are but half-truths, isolated and imperfect, unless we add to them yet a third. We must hold that reason and the works of reason have their source in God; that from Him they draw their inspiration; and that if they repudiate their origin, by this very act they proclaim their own insufficiency.

Printed in Great Britain by Hazell, Watson & Viney, Ld., London and Aylesbury.

[illegible]

14 DAY USE
RETURN TO DESK FROM WHICH BORROWED

LOAN DEPT.

This book is due on the last date stamped below,
or on the date to which renewed. Renewals only:
Tel. No. 642-3405
Renewals may be made 4 days priod to date due.
Renewed books are subject to immediate recall.

RECD LD JAN 27 '72 -1 PM 3 8

JUN 0 9 2003

8 Dec'54

LD 21–100m-1

LD21A–60m-8,'70
(N8837s10)476—A-32

General Library
University of California
Berkeley

B24533
BD555
B29
UNIVERSITY OF CALIFORNIA LIBRARY